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DISEASES OF WOMEN AND CHILDREN

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No. 1.

ORIGINAL COMMUNICATIONS.

PUERPERAL SEPSIS.¹

BY

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FELLOWS OF THE AMERICAN GYNECOLOGICAL SOCIETY:

FROM the foundation of this Society it has been the custom for the presiding officer to deliver an address at its annual meeting, the subject of which has varied from that of recommendations for the improvement, benefit, and progress of the Society to some scientific subject embodied in its object, or to some topic more or less intimately connected with the specialty of gynecology and obstetrics. In looking over the twenty-two volumes of our transactions I find that of these presidential addresses eleven were devoted to gynecology, eight to a consideration of historical or advisory subjects connected with the Society and the specialty, two were on obstetrical questions, and one was on the relations between lithemia and the diseases of the pelvic organs.

¹ President's address before the American Gynecological Society at its twenty-third annual meeting, held in Boston, May 24 to 26, 1898.

While this Society is nominally a gynecological society, it is supposed to be equally devoted to the discussion of subjects connected with the obstetrical branch of the specialty; but, as the above record shows, of twenty-two presidential addresses only two were held upon obstetrical subjects, and it is therefore evident that this part of the object of the Society has been woefully neglected. One of my predecessors, in fact, thought it necessary, only a few years ago, to call attention to this neglect, and to enjoin the Fellows not only to present more papers on obstetrical topics, but also to listen to, and take part in, the discussions upon those papers.

I have found it a matter of some difficulty to decide upon some subject for my address which would prove interesting, if not instructive, to my audience, and which would at the same time be a little out of the ordinary run of addresses of this kind. While my own predilections, as indeed the larger part of my practice, are in favor of the gynecological side of the question, I felt that it might be a desirable change to choose an obstetrical topic; and as my professional experience for a number of years past has been to a not inconsiderable extent in the field of consulting obstetrics, the major portion of which is puerperal, I have thought that the selection of Puerperal Sepsis for my presidential address might not be inopportune. I am perfectly aware that it would be presumptuous for me to attempt to instruct the Fellows of this Society, each one of whom is, to say the least, my peer in knowledge and experience, in matters which they know fully as well as, if not better than, I; and it is, therefore, only for the purpose of reviving the interest in obstetrical matters that I venture to bring this theme before you.

With the comprehension that the old-time "puerperal fever" was nothing else than septicemia and differed in no sense from septic infection from wounds in other parts of the body, an immense advance was made in the understanding of the pathology, diagnosis, and treatment of this dreadful disease. There are recognized three forms of puerperal sepsis. *First*, sapremia, or the variety in which the septic focus remains localized, and the microbe or germ infection, the staphylococcus, does not enter the general circulation. This form produces its systemic results, not through transmigration of its germs into the general system, but through the local irritation which causes a general elevation of temperature and pulse, precisely as a local inflammation or an abscess in any part of the body may do.

Second, septicemia, in which the septic germs (streptococci) find their way into the general system and by invading the blood produce general systemic infection. While in the sapremic form the products of decomposition are usually putrid and their odor is exceedingly characteristic and offensive, in septicemia there ordinarily is no distinctive odor and not necessarily any peculiar pathognomonic discharge from the genital organs. *Third*, pyemia, or the variety of septicemia in which deposits of streptococci take place in different distant portions of the body and there produce decomposition and abscesses. The first two varieties, sapremia and septicemia, are nowadays by far the most common, particularly sapremia; while pyemia is comparatively rare at present, and I do not recollect having seen more than two or three cases within the last ten years. The reason for this is probably the fact that the septic condition is recognized at a much earlier stage than it formerly was, and treated more energetically in that the cause of the sepsis is promptly and more or less effectually removed, and therefore the opportunity for a systemic infection sufficiently strong to produce metastatic abscesses is not given.

I do not pretend to lay down any positive rules or make any absolute statements as to the above pathology, for I do not claim to be an authority on bacteriology or on pathological anatomy; but I believe I have given the three varieties of puerperal sepsis as they are now generally accepted.

The sources of infection may begin at a very early period of pregnancy. Of course I consider a woman who is aborting or has aborted as a parturient or puerperal case, subject to exactly the same dangers and conditions as at term. An acute inflammation of the pelvic cellular tissue, of the peritoneum, of the Fallopian tube, or of the appendix vermiformis may infect, through the lymphatics, the uterus and bring about general sepsis. A traumatism of the vulva or of the vagina, intentionally or accidentally inflicted, may have the same result if it becomes infected. The occurrence of appendicitis and of appendical abscess during pregnancy, and its influence upon the continuation of the pregnancy and upon the puerperal state, is a subject which has only recently attracted attention, and I may claim to have been one of the first to have published a case of this kind, which, to quote the words of a subsequent writer, has now become "famous in medical literature." Gonorrheal infection; the colon bacillus, which is found in diarrheal affections; the accidental entrance of streptococci into the

vagina; chronic constipation, with the possible exosmosis of intestinal gases; atmospheric influences, chiefly those of a depressing or malarial character: exanthematous diseases; erysipelas; lithemia; acute or chronic cystitis—all these factors may act as more or less direct or at least predisposing causes of puerperal sepsis. Whether renal disease, except it be of a purulent character, such as pyelonephritis, especially when associated with purulent ureteritis, or a simple, acrid, pungent leucorrhœal discharge, or the presence of leucin or tyrosin in the blood, will produce septic infection after the subsequent confinement, seems to me doubtful. Likewise do I doubt whether any sudden or severe physical or mental shock will predispose to puerperal sepsis, except in so far as the death and decomposition of the ovum is caused thereby.

The sources of infection during labor are decidedly more positive and obvious. It has been stated by a former president of this Society, a very eminent obstetrician, that in every case of puerperal sepsis the physician or the nurse is to blame—that is to say, that the infection has been carried directly into the genital tract by the fingers or instruments of the attendants. On general principles I dare say this gentleman was correct, although I think he went a little too far when he gave the appellation of “murderers” to the attendants in such a case. Unquestionably in the large majority of cases of puerperal sepsis in private practice the infection comes from the fingers or instruments of the physician or the nurse; and this statement applies not only to the poorer classes, but to a certain extent to those in better circumstances. It has been frequently stated that the women in well-conducted lying-in asylums are far safer from puerperal infection than those who are attended in their own houses, even though they be brown-stone fronts. This is not as it should be. It is not only the hands and instruments which may introduce the infection, but also the clothing of the attendants, which may have been in contact with some infectious case and which has not been thoroughly cleansed and disinfected. I am sure that I have seen several such cases which could not be explained in any other way. Naturally the denuded endometrium, the more or less bruised and lacerated cervix, vagina, and perineum are by far more susceptible to the entrance of septic germs than the more or less intact sexual organs during pregnancy. Retention of portions of placenta or clots or membranes does not necessarily mean their decomposition and a septic infection.

This takes place only when the germs are introduced from without; but the presence of such foreign bodies—as they then are—in the uterus certainly offers a much more favorable field for the location of germs than the empty and well-contracted endometrium. I am confident, however, that it is not always the fault of either the physician or the nurse if septic germs enter the genital tract after parturition, because I have seen several cases—three of them in my own experience—in which there was absolutely no possibility of the introduction of germs into the vagina, simply because in my cases I had not been for weeks in contact with anything of a septic character, not to mention that the most careful antiseptic precautions had been taken during the whole confinement, and still putrescence of coagula took place and a well-marked sapremia developed, which was speedily and permanently relieved by the removal of the putrid clots. Now, in these cases I believe confidently that the septic germs, wherever they came from and however they got there, were sucked into the gaping vagina during change of position of the patient—say, from the back to the side, or *vice versa*, or after a fecal evacuation—when the relations between the pelvic viscera and intra-abdominal pressure changed so that the gaping vulva was placed in a favorable condition for the entrance of air by suction. Anybody who has heard the air expelled from the vagina after an examination through the Sims speculum, with the patient in the left semi prone or in the knee-chest position, during which examination it had of course entered, can easily understand how a change of position might permit air to enter the vagina through the gaping puerperal vulva. Finally, I have seen one instance in which I am perfectly sure by exclusion that the infection was brought about by the woman herself. She had intense puerperal sepsis, of which she ultimately died, and absolutely no other cause could be found, after a careful investigation of all the circumstances surrounding the case, than a felon on the index finger, which had burst shortly before labor, the woman admitting that she had introduced another finger of that hand into the vagina to relieve an itching which she had experienced shortly after her confinement. I am aware that I may be criticised for entertaining these views both as to atmospheric and as to auto-infection; but if they are not correct I am at a loss to comprehend the source of infection in some cases that I have seen.

The retention of decomposed lochia in the uterine cavity by

a sharply anteflexed uterus is a not uncommon cause of rapid, unexpected septic absorption. I have seen a number of such cases, and have at once relieved the symptoms by straightening the canal by bimanual pressure and intrauterine irrigation. A return of the retention is prevented by appropriate manipulation until the uterus has contracted permanently.

The *prophylaxis* of puerperal sepsis is regulated by the prevention and removal of the various causes of the infection which I have mentioned above. It is not necessary to go into details on this subject; the methods speak for themselves. The question whether it is worth while to use any local prophylactic treatment in cases of gonorrheal or acrid leucorrheal discharges is one which must be left to the individual practitioner. Of course, if a typical gonorrheal discharge, as evidenced by the gonococcus, is present, an effort should be made by means of frequent bichloride douches to cure this source of infection. I am not so perfectly sure, to tell the truth, that gonorrhea is really a source of puerperal septicemia. I do not, of course, mean to deny that a gonorrhea may spread to the endometrium and thence to the tube, and may after confinement produce an acute salpingitis and a pyosalpinx; but this is not puerperal sepsis. Still, to be on the safe side, I think it wise to try to cure the gonorrhea before labor, if possible. When labor has once begun it behooves the physician and nurse to use every possible precaution to prevent the introduction of septic germs into the vagina. In some public institutions, and I dare say in the hands of many practitioners in private cases, it is customary not to make a vaginal examination at all, in order to avoid this danger of infection, and to define the position of the fetus and mark the progress of the labor by external examination. This is certainly a very commendable and safe practice if the attendant is at all in doubt as to being perfectly aseptic. I think, however, that if he renders himself surgically clean, as he would do if he were going to perform an abdominal section, he may safely proceed after the old-fashioned method.

An important element of prophylaxis against puerperal sepsis is the thorough emptying of the uterus of placenta, membranes, and coagula, and the maintenance of as thorough a contraction of the uterus as it is possible to achieve by friction, ice, or—if the practitioner believes in it—ergot until such contraction is permanent. I should not hesitate, if necessary to secure such thorough emptying of the uterus, to introduce my

hand into it, rather than to take the chances of either secundines or coagula remaining within. There are times when, of course, it is impossible to foresee what may occur later on, and this rather ambiguous remark is well illustrated by a case which I saw recently in consultation. Here, five weeks after confinement, the woman having already had eight children and the last confinement having been perfectly normal, there were a sudden chill and rise in temperature. The attending physician made an examination, found the uterine canal widely patulous, and just above the internal os a mass which was partly loose and partly attached to the uterine wall. I found the same condition and supposed it to be a sloughing myoma which had come down and become partly detached after the confinement. The patient was taken to the hospital, and on removing this mass it was found to be a placenta succenturiata, which, of course, had not been suspected by the attending physician at the time of the confinement. Indeed, there would be no way to detect such secondary placentæ in any case unless every endometrium were examined with the hand immediately after the expulsion of the placenta. Manifestly this would be injurious and probably unnecessary in a large proportion of cases, since these accessory placentæ are of quite rare occurrence. I am not aware of the percentage, nor do I find it stated in the text books.

The *diagnosis* of puerperal sepsis is, as a rule, not at all difficult. A chill, followed by rapid rise of temperature, usually within three or four days after the confinement; a rapid pulse, running up in the severe cases to 140 and 150; repeated chills; temperature varying between 102° and 105° F., occasional remissions, but scarcely ever falling to 100°; tongue coated, in very bad cases furred, brown, and dry—in fact, the usual symptoms of septic infection. It is a fair assumption that any rise of temperature, except it be merely temporary, after a confinement, is due to septic infection. The old theory of so-called milk fever is pretty well exploded as a reason for prolonged elevation of temperature after labor. Occasionally, however, when the septic infection has been gradual, even a high degree of sepsis may occur with little or no elevation of temperature; the rapid, weak pulse, with the history of the case and the absence of marked anemia and other causes for a rapid pulse, will indicate the true nature of the disease. There may be an offensive vaginal discharge, or the lochia may be absolutely odorless. The latter type of cases of puerperal septi-

cemia, where only the high temperature and pulse indicate the virulence of the infection, give, in my experience, the most unfavorable prognosis.

The differential diagnosis must not be overlooked, since it is possible, and indeed not uncommon, that a local pelvic inflammation, which may then be of the extraperitoneal character, may be the cause of the chill and fever. A digital examination will of course reveal the existence or absence of such a pelvic inflammation. The accidental presence of an appendical inflammation must also be borne in mind at this time, as there is no reason why such an occurrence might not be met with during the puerperal state as well as at any other time. I have seen and recorded just such a case. Of course, if there is an absence of any pelvic reason for the chill and pyrexia, other organs of the body, such as the bladder, kidneys, lungs, etc., should be examined for a possible solution of the difficulty. To the formation of a correct diagnosis it is absolutely essential that an examination of the genital organs should be made: first, with the finger to ascertain whether there is any lesion of the external organs, of the vagina or the cervix, and then to determine whether the cavity of the uterus is empty or whether there is contained in it some septic focus, such as portions of the placenta, membranes, coagula, or whether the endometrium presents the peculiar spongy, thickened, and furrowed feel of puerperal septic endometritis. If thought advisable a specular examination may be made of the vagina and cervix, which may reveal a laceration of those parts, the surface of the wound presenting a yellow or brownish gangrenous appearance. Although in some quarters true diphtheria of such lesions of the vagina and cervix has been considered a not unusual condition, I myself confess that I have seen but very few cases in which I could interpret the peculiar appearance of the wound as indicative of diphtheria proper, and then only when it was unquestionable that the infection had been transmitted from diphtheritic sore throat in some other member of the family. Usually the uterus is found more or less dilated and not in the condition of normal contraction corresponding to the time after delivery. If septic endometritis is the cause of the constitutional infection, the walls of the uterus are very much thickened and the parametria usually infiltrated and puffy.

The first indication for *treatment* is the removal of all foreign substances from the endometrium which may be or

evidently are the source of the infection. This can be done either with the finger, if they can be reached, or with a large, long, blunt curette which I had made for this purpose about sixteen years ago, and which has since been repeatedly described under my name. When the uterine cavity has been thoroughly emptied it is well to irrigate it with a mild solution of permanganate of potassium, or a ten per cent solution of chloride of zinc, or with Labarraque's solution, or, if the foreign bodies removed are offensive, with Marchand's solution of peroxide of hydrogen diluted one-half. I confess that the mild solution of permanganate of potassium answers, in my opinion, equally well as any of the others, with the exception of the peroxide of hydrogen. I have very seldom employed intrauterine irrigations of bichloride of mercury, and then never stronger than 1:10,000, because I have feared the systemic absorption of the drug and its consequent bad effects. I do not think very much of the use of iodoform pencils to the endometrium after curetting and irrigation or in any case of septic endometritis, because I know the iodoform does not do any particular good, and because it masks the odor and character of the discharges. I have seen good, however, from packing the endometrium with iodoform or sterilized gauze fairly tightly when it was desired to bring about a contraction and reduction in size of the uterus—that is to say, after the cavity was emptied as above mentioned.

In very bad cases of septic endometritis with a great deal of inflammatory hypertrophy of the uterine wall I am not in favor of using the curette, either dull or sharp. Indeed, I will say here that I use the sharp curette in the puerperal endometrium only when I fail to remove the foreign body which produces the sepsis with the dull curette. I think the curetting of a septic endometrium does by far more harm than good, as it removes tissues which have already undergone the inflammatory obliteration of their absorbent vessels and which, therefore, are no longer a source of septic infection. The curette simply lays open fresh channels for infection, because it is manifestly impossible to remove every microscopical vestige of the septic decidua. I think it a far better plan to apply to such an endometrium either a solution of chloride of zinc (from twenty to thirty per cent) or pure tincture of iodine or iodized phenol, through a cylindrical speculum, then to wash away with sterilized water whatever loose débris there may be, and then to pack the cavity with iodoform gauze, this gauze to be removed within forty-eight hours, or even to be left in another

day or two, provided the symptoms (chill or rise of temperature) do not call for its earlier removal. After such strong cauterization, however, intrauterine irrigation for some time following removal of the gauze will be necessary to secure a clean and healthily granulating endometrium. The method recently recommended by Carossa, of introducing a large drainage tube to the fundus and then packing the uterine cavity with sterilized gauze down to the external os and saturating this gauze with alcohol of twenty per cent strength, has been highly recommended by Ill and several others and seems on its face plausible. I think, however, that it still requires much more proof of its actual value than we have so far received before unconditionally accepting it.

It may be assumed as an axiom that when the uterine cavity is entirely empty and there is nothing in it which could produce sepsis, even though there be the high temperature and pulse indicating general sepsis, there is no use in giving intrauterine irrigations. I have seen case after case, in which the uterus was well contracted, in which it was difficult to introduce an ordinary recurrent tube, and still the practitioner was making intrauterine irrigations, thinking thereby to influence the general septic infection of the patient. Of course he failed, simply because there was nothing left in the uterus to remove; the infection had spread beyond, and local remedies of any kind were neither called for nor of use. Whether these intrauterine applications should be repeated or not, and when an intrauterine douche should be given, after the condition has changed from a general septic state to that of a local pelvic inflammation—as fortunately very often occurs—are points that depend upon the progress of each individual case and upon the views of the practitioner. It is safe to say that when the examining finger detects in the pelvis the evidence of a cellulitis or a peritonitis or a salpingitis, then all applications to the endometrium should be suspended and the attention of the practitioner be directed toward subduing and controlling the local inflammatory condition. Then, I am happy to say, the prognosis also improves, except, of course, there be at the same time a general sepsis. When the symptoms, however, indicate their emanation from the local inflammation, the case, as a rule, becomes distinctly amenable to treatment and the hopes of both physician and friends are raised.

Infected vaginal or perineal wounds should be touched with a saturated solution of permanganate of potash or a twenty-

five per cent solution of chloride of zinc. Utero-vaginal drainage should be maintained by thin strips of iodoform gauze gently passed through the internal os as required.

The medicinal treatment of puerperal sepsis is unfortunately not at all satisfactory. I have frequently expressed my opinion that in bad cases of puerperal septicemia it is simply a question as to which holds out the longest, the patient or the disease. If we can keep the patient alive by means of stimulants—that is, alcohol, caffeine, strychnine, and nourishing food—until Nature has thrown off the septic germs, then we gain the victory. If, however, her stomach gives out, if she retains no nourishment and no stimulants, the fight is very liable to be an uneven one and the disease wins. I have no faith whatever in quinine as a reducer of temperature; it is all very well as a tonic, but this is not what we want in the acute stages of puerperal septicemia. Large doses of quinine, as I have frequently seen them given until the ears rang, have never in my experience influenced the temperature more than momentarily; and as for the influence of quinine upon the septic germs, it is absolutely useless. The reduction of temperature by means of the coal-tar derivatives, such as antipyrin and phenacetin, is, of course, only temporary, and beneficial only in that it renders the patients more comfortable for a time. The objection to them is that they not only mask the height of the fever, but that they also depress the heart. As for masking the temperature, that is of no consequence when we know what the disease is, and the influence upon the heart can be more or less counteracted by combining the drug with caffeine. I therefore do not hesitate, when I find the heart condition warrants it, to give phenacetin, which is now the popular remedy of this class, in from three- to five-grain doses combined with caffeine, carefully watching it as it may require. Antipyrin I have not given for many years in puerperal fever, although some ten or twelve years ago I wrote an article on antipyrin in this disease, having at that time seen a number of cases very much benefited by its use. I remember one case in which a patient took for a period of at least two weeks on an average ninety grains of antipyrin daily; it was one of the worst cases of puerperal sepsis I ever saw recover, and it is a wonder to me to this day that her heart stood these large doses of antipyrin so well. They were not given under my supervision or by my orders to that amount, but eventually, in spite of them perhaps, the patient recovered.

The use of saline laxatives, as advocated many years ago by Seyfert, of Prague, for the purpose of eliminating the poison, as he thought he could, is merely a matter of historical interest. I would add that I think the use of ergot for the purpose of keeping up steady contraction of the uterus might be beneficial if the stomach will stand it. I am inclined to think that a few hypodermatics of ergot, judiciously and properly administered, would, however, be more effective, and for this same purpose I also advocate the application of a large ice bag to the hypogastrium. Of course the abdominal ice bag and ice-water coil, the frequent sponging with cold water, or cold water and alcohol, and perhaps even the careful employment of a tepid full bath gradually cooled until its temperature reaches 70° , are all potent factors in the reduction of temperature. If the inflammation is localized in the pelvis the ice-water coil or the ice bag will usually suffice for this purpose.

In conclusion, I have still to speak of the recently introduced treatment of septic infection, whether puerperal or not, by means of the so-called serum therapy—that is, by hypodermatic injections of the antistreptococcic serum. My experience with this remedy in puerperal sepsis is limited to three cases, all of which seemed desperate and had failed to respond to any of the other remedies which had been employed. From three to six hypodermatics of ten cubic centimetres of serum were injected at intervals of from four to twelve hours, and all three cases recovered. I certainly feel that in a severe case of puerperal sepsis in which the septic focus has evidently passed from the pelvic organs, and in which the ordinary remedies above mentioned have failed to reduce the temperature and the pulse—in which, in fact, matters are steadily going from bad to worse—I should unhesitatingly employ the serum injections, simply because I think there is no particular risk in using them, and because I have seen, as I have mentioned, results following them (if I cannot positively say produced by them, but certainly following them) which surpassed my expectations. Intravenous saline infusions might be employed to prolong life in desperate septic cases. Whether they would influence the sepsis is doubtful.

I now come to the surgical portion of my subject, which will be less extended than the medical part. Of course wherever pus is found the old surgical rule applies that it should be evacuated at the spot where it can be most easily reached. If it points into the vagina, evacuate it there; if toward the

abdominal wall or in one or the other iliac fossa, make the incision there. Cases of this kind, in which pus forms in the pelvic cavity, are of course not cases of true puerperal sepsis. The pus is the result of an exudate, which, it is now freely acknowledged, may be extraperitoneal, or intraperitoneal as the result of a salpingitis and oöphoritis. We may have thus a true pelvic abscess, or we may have a pyosalpinx or a pus ovary (ovarian abscess). The two latter conditions may be treated by vaginal section if the sac is adherent; or the pus sac may be removed by abdominal celiotomy if it is loose or is adherent to the anterior abdominal wall. A general purulent peritonitis may be treated by abdominal or vaginal section, unfortunately very seldom with a successful result. By a vaginal operation better drainage is secured; therefore I think I should rather favor that route, although a thorough irrigation of the abdominal cavity is not then possible. The best, perhaps, is a combination of the two—an abdominal section first, and then a perforation through into the vagina and thorough irrigation from above downward. But I am sorry to say very few successful results are reported from any surgical procedure in general purulent peritonitis. Septic sinuses should be laid open as freely as is safe and practicable, curetted, irrigated with peroxide-of-hydrogen solution, and packed with gauze. Such sinuses sometimes extend deep into the pelvis and honeycomb the pelvic tissues. I have recently seen a case in consultation in which I was called on the supposition that the high temperature, running up to 107° for two weeks after confinement, was due to a pyosalpinx. I found, however, a deep pus cavity on either side of the vagina, which extended down into the buttock and of course failed to drain properly. It was necessary to drain through the skin of the buttock. There was no pyosalpinx.

As regards the surgical treatment of pelvic exudates, I might say that I favor the expectant method of treatment, by means of cold when the temperature warrants it, and heat and blisters afterward, until it becomes evident that absorption is taking place or else that the exudate is undergoing suppuration, when of course the abscess is opened as above stated. I have seen, in cases of intraperitoneal exudates surrounding the tubes and ovaries, many instances of complete restoration of those organs to their normal functions, even when I had feared that suppuration would eventually result. I therefore prefer to give the patient the benefit of the doubt in such cases rather than to recommend an early removal of the offending organs by abdominal or vaginal section.

There still remains for me to say a few words on a subject which has recently been the cause of some controversy, namely, the justifiability and indications for complete hysterectomy in puerperal sepsis. There is no question that if the focus of infection is in the uterus or its appendages, and cannot be reached and removed in any other way, the ablation of the uterus and its appendages by abdominal or vaginal section is a perfectly justifiable and proper operation. It is perhaps not quite so easy to decide precisely when this indication is present. I do not think that a puerperal sepsis which has run for a number of weeks, and in which there is absolutely no evidence in the uterus or adnexa of a septic focus, would warrant a hysterectomy. Of course the opinions and the conscience of the individual surgeon must guide his decision in such a case. Panhysterectomy per vaginam for the removal of septic foci invading the pelvic cavity, the appendages, and, more or less, the uterus, has its distinct place in pelvic surgery, but it is perhaps quite as well to sound a warning note against a too hasty and indiscriminate performance of this rather mutilating operation.

Finally, I am decidedly in favor of removing the whole uterus with appendages after Cesarean section—that is, performing a modified Porro operation—provided the section was performed at a period when the uterus was already in a septic condition. It is hardly worth while to preserve a septic uterus which has already infected the general system, in a case in which the indication for the Cesarean section is a contracted pelvis. Even if the woman recovers from the Cesarean section the question is open as to whether a future pregnancy is a desirable occurrence.

Now, gentlemen, I will proceed merely to make a few remarks upon some topics of general interest which have occupied the attention of gynecologists and obstetricians during the past year. The question as to whether an abdominal or a vaginal section is preferable for the treatment of certain varieties of pelvic disease, chiefly suppurative conditions, is perhaps pretty definitely settled—namely, that it is best to use the vaginal route when the object is merely to incise, open, and drain abscesses, whether they be of the pelvic cellular tissue or of adherent tubes and ovaries; also for intraligamentous ovarian tumors, for cysts of the broad ligament, and for effusions of blood between the layers of the broad ligament or in Douglas' pouch, when the latter is sealed off from the general peritoneal cavity by adhesions. Whether it is perfectly safe and wise, in

view of the danger of uncontrollable hemorrhage, to attempt the removal of an ectopic sac through the posterior vaginal vault is a question still undecided. The majority, I believe, prefer the abdominal route, although the vaginal method has its ardent advocates. As a rule, all intra-abdominal tumors should be removed by the abdominal method; I think this is generally accepted. It is, of course, possible and easy to extirpate fibroids, which are not larger than a fist and which press well down into the pelvic cavity, through a vaginal incision; indeed, some of our French brethren remove large fibroids extending even to the umbilicus by morcellement through the vagina, and vaginal hysterectomy for small fibroids is growing in favor.

When there is inflammatory or suppurative disease of the appendages and the operator is in doubt which route to choose, in my opinion the abdominal method should be selected, even though it may become necessary to complete the operation through the vagina, with or without previous closure of the abdominal wound. In case of a single or double pyosalpinx occurring together with a single or double intraligamentous ovarian or a pelvic abscess, if this rather complicated and difficult diagnosis can be made or is suspected, it might be best to open the abdomen first, remove the diseased tube or tubes, and then open and drain the ovarian or pelvic abscess per vaginam. It might even be thought advisable to drain through into the vagina, the abdominal wound being closed.

The surgical treatment of retrodisplacements by the three popular methods—that is, shortening of the round ligaments, ventral fixation, and anterior vaginal fixation—is being practised with perhaps equal success, according to the reports of the advocates of each method. I may safely say that the shortening of the round ligaments according to the original method of Alexander (or at least Alquié-Adams Alexander) has steadily been growing in favor, so that many of its former opponents are now enthusiastic over it. Ventral fixation I do not think is quite holding its own, neither is anterior vaginal fixation. The method of the future for movable retrodisplacement of the uterus would seem to be shortening of the round ligaments through an anterior vaginal incision. We shall expect to hear in the course of the next year what the results of those of our Fellows are who have had some experience with this method and who will undoubtedly continue their observations. The same may be said, perhaps, of the shortening of the round ligaments through an abdominal incision.

The electrical treatment of fibroids seems to have fallen more

or less into desuetude; at least we hear very little of it, even from its originator.

The conservative surgery of the tubes and ovaries is another one of the hopeful subjects of the future, if it may not already be said to have entered upon its present. Certainly the results of several of our Fellows are marvellous and incite to further experiments in that line.

The management of the stump in abdominal hysterectomy is another topic of interest which is still under discussion. As the advocates of both the complete extirpation and of the preservation of the cervix with its covering of peritoneum claim about equally good results, it would seem as though it makes very little difference which plan is followed. My predilection personally has been for the preservation of the cervix and the perfect approximation of the peritoneum by sutures over it and on either side, all silk ligatures thus being buried.

Vaginal hysterectomy for cancer I believe is still performed according to the old-established methods, partly by ligature, partly by clamps. I confess that it seems to me that the galvano-cautery operation of Byrne offers the best chances for a permanent cure in suitable cases.

Symphyseotomy is another one of the successful operations of the past year and appears to be growing in favor.

Abdominal drainage after celiotomy is no longer much in vogue, as it seems, and when drainage is necessary I think the majority of operators prefer to drain through a free vaginal incision, usually by means of gauze.

The announcement of the discovery of the artificial and voluntary predetermination of sex, reported to have been made by Prof. Schenck, of Vienna, seems to have been slightly premature, and as yet, not having been communicated officially and scientifically by its discoverer, can hardly be said to have attained a position in science.

It must have become apparent to the majority of gynecologists during the last few years that there was a growing tendency upon the part of the general surgeon to encroach upon the field of the gynecological surgeon without offering him a fair equivalent. Of course, in this the general surgeon will claim to be and is perfectly in his right, and it is only the fault of the gynecological surgeon if his education as a general surgeon has been neglected and his opportunities, therefore, for practising general surgery are few and far between. It is but a sign of the times, and I can only agree with one of our Fel-

lows, who, in a recent address touching upon this point, said that if he had to begin again he would prepare himself to do general as well as gynecological surgery. It would be well for the young gynecologist who is about to enter practice to remember this: he will probably find that in self-defence he will be obliged to take whatever surgery he can get and call himself surgeon rather than gynecologist. In fact, the spread of gynecological specialism—that is, the increasing number of young men who have entered upon the practice of gynecology during the last ten years—has produced such a scattering of the cases that come under that heading that it seems sometimes as though there were hardly enough to go around, and we are constantly seeing in the medical journals direful notices of the decadence of specialism, and particularly of the downfall of the gynecological specialist. I do not think, gentlemen, that it is quite as bad as that, but I presume the majority of you will agree with me that the days when the gynecologist could easily make a fortune are past. And truly it cannot be said that it is not partly his own fault. The post-graduate schools, the polyclinics, the many hospital clinics, the teaching of the general profession in diagnosis, treatment, and operations which formerly were *terre incognita* to them and to which they were in the habit of calling the specialist, have so broadened the field and improved the knowledge of the general practitioner as to make him, in many instances at least, a quasi-specialist.

Well, so be it! Those of us who have seen the specialty of gynecology evolve from almost nothing to its present position can well be satisfied to rest on our oars and on such laurels as we may have achieved.

In justice to the gynecological surgeon it is but fair to touch on another side of this question—namely, the fitness of the general surgeon to usurp the knowledge, functions, and experience of the gynecologist. We all know how long it requires and how difficult it is to gain the *tactus eruditus* by means of which an accurate diagnosis of pathological conditions in the female pelvis and abdomen can be made, and how liable even an expert gynecologist is to err in a doubtful case. How, then, can the general surgeon, with all due allowance for his skill and dexterity as an operator, expect to rival the expert gynecologist in the field which the latter has made his special study? I have seen general surgeons, to whom I would unhesitatingly entrust my patient for an operation in any

other region of the body, make woful blunders when attempting to carry out the operative indications emanating from their mistaken diagnosis or erroneous appreciation of a purely gynecological case. It is far easier for a gynecological surgeon to develop into a general surgeon than for the latter to become an expert gynecologist.

The past year, gentlemen, has been sorrowfully notable in that it has deprived us by death of some of our most valued members. Of our regular Fellows, Lusk, Kollock, Parvin, Wilson; of our Honorary Fellows, Hicks and Tarnier, have joined the great majority. It will be hard to replace them, their memory will always be green, and their deeds will live after them.

I cannot close my address, gentlemen, without again thanking you for the high distinction which you have conferred upon me in electing me to the office of President. There is no greater honor which I could have coveted or attained than to have been President of the American Gynecological Society.

20 WEST FORTY-FIFTH STREET.

AN IMPROVEMENT IN THE TECHNIQUE
OF THE AFTER-TREATMENT OF PERITONEAL SECTION.¹

BY

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Chicago.

AFTER having had my share of deaths from peritoneal section during several years of work, I was impressed by the almost invariable association of intestinal paralysis or obstruction with death from septic peritonitis. In cases operated upon before the development of the aseptic technique as we practise it to-day, the septic infection was so prominent a factor that it could not but be considered as the cause of the paralysis or obstruction. But since septic influences have been largely excluded from the operating room, my observation has been that the intestinal paralysis or obstruction has come to be more often the cause of the fatal sepsis, either wholly or in

¹ Read before the Illinois State Medical Society, May 18, 1898.

part. Ordinarily the peritoneum can take care of the small amount of sepsis that gains entrance to its cavity during a properly performed section, but when the intestines are paralyzed a slight infection not only has a chance to develop, but sepsis finally finds its way through the stretched intestinal walls.

The following facts and considerations led me to adopt this view. I noticed that bad results always followed prolonged exposure or repeated handling or eventration of the intestines, as well as difficult enucleations undertaken without the help of Trendelenburg's position; that severe operations of one and two hours' duration, in which the intestines were kept covered and not disturbed, were followed by but little reaction or other constitutional disturbance; that in many cases of such intestinal paralysis the patient's temperature did not rise until a few hours before death; that almost complete intestinal obstruction would in some instances persist for a week or so after the operation, unaccompanied by temperature, when the obstruction would at last become complete and the temperature go up before death supervened. I also noticed, as has almost every operator, that no matter how sick the patient, her condition rapidly improved and she nearly always got well when flatus could be made to pass freely per rectum; and I soon found that this could almost invariably be accomplished, even in the most unpromising cases, if the attempts at it were begun early enough. We all know what a decided change came over the statistics of ovariectomy when the pedicle was dropped into the abdominal cavity instead of being fixed in the external wound, and we know how frequently it was shown at autopsies that the intestines became obstructed or paralyzed by adhering to the stump and abdominal incision.

I explain all this by the fact that the exposure of the peritoneum to air, the handling of the viscera, the production of raw surfaces, and the leaving of dead matter such as bloody oozing or debris, are followed by intestinal adhesions in from twelve to thirty six hours. If the intestinal coils have been displaced, these adhesions produce more or less intestinal paralysis and sometimes complete obstruction.

Many gynecologists, recognizing the fact that improvement follows the free passage of flatus per rectum, try to move the bowels during the second twenty-four hours. Others give stimulating enemata as necessary to relief from gas pains.

Others give salines to prevent peritonitis by depleting the peritoneal vessels and thus draining the peritoneum. But these efforts are either begun too late or not employed with systematic thoroughness, and do not with any regularity prevent deaths of the kind under consideration.

Believing that my observation was correct, I resolved to test it by a systematic treatment, both before and after difficult operations, directed to the prevention of adhesions of the bowels in the unnatural position in which they may have been left.

Accordingly, the day before a peritoneal section, the patient is dieted and purged sufficiently to reduce the gaseous distension of the intestinal coils, to the end that they may be kept out of the way during the operation. In vaginal sections, and in abdominal sections for large tumors, the intestines are not so liable to be in the way as in abdominal sections upon small pelvic growths or diseased organs. In the latter class of cases I try to produce six or eight large stools the day before the operation is performed. Patients of relaxed fibre receive full doses of strychnine from the time I see them. Two hours before the time set for the operation a mild but efficient cathartic is given, such as two teaspoonfuls of the fluid extract of cascara.

As soon as the patient awakes from the anesthetic a drachm of sulphate of magnesia in an ounce of water, or an equivalent dose of some mineral water, or an ounce and a half of the liquid citrate of magnesia, is given every hour and repeated immediately whenever vomited. About six hours after the operation is completed a stimulating enema is given, consisting usually of two ounces of glycerin and four of water, or from half to a drachm of inspissated oxgall in half of a pint of water (without glycerin) is thrown into the upper rectum and repeated every two or three hours until flatus passes freely between enemas. When this occurs the saline is also stopped, but not until then. In trying to start the passage of gas most surgeons think it enough if gas and feces come with the enema. But this is not sufficient. The treatment must be continued until flatus passes freely between enemas; and if it ceases to pass occasionally after the enemas have been discontinued, then another should be given.

If the operation has been a simple one I commence the salines and enemas a little later, not to prevent serious results, but

because the patient is usually very uncomfortable until flatus passes freely, and is nearly always perfectly comfortable after it. It enables me to do without morphine. On the other hand, if raw intestinal surfaces are left after a difficult operation, I sometimes give a high glycerin enema before the patient is taken from the operating table.

As presumptive proof of the value of this treatment, I have recently had one hundred and five consecutive recoveries after peritoneal sections, and I commenced to be thus thorough and prompt in its administration about the time this series commenced.

I do not claim that it will prevent deaths, for deaths may be due to sepsis, embolus, and conditions not connected with intestinal paralysis or obstruction; but my many happy experiences with serious cases that threatened to take the old course have convinced me that my mortality from this cause will never go back to what it was before.

I do not claim to have discovered a new treatment, but rather to have developed and systematized an imperfectly recognized one and to have demonstrated its value.

100 STATE STREET.

THE SURGICAL TREATMENT OF IRREDUCIBLE RETROFLEXION OF THE PREGNANT UTERUS.¹

BY

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Buffalo.

THE alternatives which have been given us, up to the present time, in cases of retroversion of the gravid uterus with incarceration, are either to replace the uterus, or, that being impossible, to empty it; the argument being that if we leave the uterus displaced the death of the mother and child will result, whereas if we empty the uterus the mother may be saved although the child be lost.

This teaching, in the light of recent experiences in abdominal surgery, should be changed; and if it be found impossible by

¹ Read before the American Gynecological Society, at its twenty-third annual meeting, held in Boston, May 24-26, 1898.

the most improved methods, including the use of an anesthetic, to replace the uterus, the abdomen should then be opened and the fundus pulled up by the hand introduced behind it. If the uterus be so large as to completely fill the pelvis, efforts at replacement through the vagina will fail, not because the uterus is too large to be forced through the pelvic brim, but because, filling completely the pelvic cavity, when it is pushed up nothing can enter from above to take its place, so that its progress is limited; and the moment pressure is withdrawn from below, atmospheric pressure forces the uterus down again into its old false position. This occurs even in the knee-chest position. The truth of this statement will be readily appreciated by anybody who has operated on one of these cases. Even if the uterus be soft and yielding it requires considerable manipulation to get it up, and it can only be done by letting the air in behind it. It must not be forgotten that pregnancy may exist when there are adhesions, and that these may be an insuperable bar to reposition until they are broken by the hand on the inside, thus giving another indication for operation.

The following cases will illustrate the method:

In November, 1895, Mrs. A., 35 years of age, married and the mother of several children (the last six years before), presented herself at my private hospital for treatment. Since the birth of the last child she had had a number of miscarriages. She stated that the menses had been absent for four months, and during that entire period she had been feeling very badly. There was great pain in the pelvis, with inability to empty the rectum and bladder. She could not walk or stand without pain.

Examination showed the pelvis filled with a soft, apparently thin-walled, fluctuating cyst behind the cervix. It was not very tender, but was quite firmly fixed. The cervix was crowded well forward to the symphysis. The position of the body of the uterus was uncertain, but I thought I could feel it above the symphysis. The patient had often felt what she called "the tumor" in the vagina, and said that she was sure it had been there for a long time—for how long she did not know.

The diagnosis was uncertain. Either it was a retroflexion of the gravid uterus or a cyst behind the uterus and filling the pelvis. I was unable to determine positively which. It was utterly impossible to push the mass out of the pelvis, although

various methods were tried, including the knee-chest position, pulling down of the cervix with the volsella, and the making of firm pressure through the posterior vaginal pouch under anesthesia.

The matter having been explained to the patient, and the advisability of opening the abdomen being shown, she consented to the operation. After emptying the bladder and making an incision into the abdominal cavity, I found that I had to deal with a retroflexed gravid uterus. I introduced my hand behind it, and with considerable difficulty succeeded in getting the fundus up out of the pelvis. As I have before said, atmospheric pressure was the principal hindrance. I then closed the abdomen.

The patient made a prompt and uninterrupted recovery and left the hospital perfectly well. I have not heard further from the case.

The second case was similar, but presented some different points in the operation. The patient was 39 years of age and had had several children. The diagnosis was retroflexion of the pregnant uterus with incarceration. All efforts at replacement failed and the patient continuously grew worse. The bladder was greatly distended and was not emptied by the passage of a catheter.

On July 22, 1897, at the Buffalo General Hospital, I opened the abdomen in the usual place. After cutting through the abdominal walls I found that I was below the peritoneal cavity, the peritoneum having been greatly drawn up by the distended bladder. I tapped the bladder at this point and drew off a very large quantity of urine, and then closed the opening with a few catgut stitches. After opening the peritoneum the hand was introduced, and with considerable difficulty, as in the other case, the uterus was replaced. A catheter was retained in the bladder for two days.

The patient left the hospital August 11, in perfect health, her temperature never having been above 99°. She writes me that she went through her pregnancy and labor without any unusual symptoms.

A careful search through the literature of the last five years fails to show any similar case, except one reported by Dr. Murdoch Cameron, of Glasgow.¹

His case was almost a repetition of my second case and was

¹ Brit. Med. Jour., vol. xi., 1896, p. 1277.

treated in exactly the same way, including the tapping of the bladder under the peritoneum. His patient made a good and prompt recovery. His case was done about a month later than my first case, but was not published until the year following, and I did not see his article until I came to write this paper. We therefore arrived at the same conclusion regarding the treatment of these cases independently, which may be taken as an indication of the correctness of our opinions.

Experience as well as reason would, therefore, certainly indicate, when we have an incarcerated, retroflexed, gravid uterus, that the abdomen should be opened as a last resort rather than that the uterus should be emptied.

37 ALLEN STREET.

PUS IN THE PELVIS.¹

BY

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IN presenting the cases narrated in this paper, with the remarks and conclusions which their consideration naturally suggests, it is not pretended that anything very new or strange is being brought to your attention. The effort will be made, however, to convince your minds that vaginal section, irrigation, and gauze drainage have advantages over celiotomy followed by difficult and prolonged enucleation of pus sacs in the pelvis, which have not heretofore been generally appreciated at their full value.

It was formerly thought necessary to a safe and successful operation through the vagina for the evacuation of pelvic pus that the abscess sac must impinge against and be adherent to the vaginal roof, so that, when opened, the pus would flow directly into the vagina without passing through intervening tissues between the abscess wall and the vaginal opening. We now know that the fear of infection is unfounded when drainage is maintained free from obstruction.

Recent bacteriological reports have demonstrated also that there is vastly less danger than was formerly supposed of the

¹ Read before the Washington Obstetrical and Gynecological Society

infection of the pelvic or abdominal cavities after operations through the vagina, including hysterectomy, or when the vaginal is substituted for abdominal drainage after difficult and complicated celiotomies. The ancient and now fortunately obsolete method of tapping these pus collections with a trocar, or even an aspirator, has given way to the more modern operation of vaginal celiotomy, as it is now called, which insists upon a large opening and the bottom of the abscess torn completely out when possible; copious irrigation, generally with a hot antiseptic fluid; gauze packing, which acts at the same time as drainage. Pus sacs may be safely opened when within reach of the examining finger, the alternate hand making pressure from above as in bimanual palpation.

The following twelve cases have been selected as examples of different varieties of pus in the pelvis.

CASE I. I saw with Dr. Crook at the Providence Hospital. He thought her too weak to stand an operation and that she was going to die. She had a large, fluctuating sac of pus in the pelvis, chills, sweats, high temperature, and rapid pulse. Her relatives were weeping around her bed when we entered her room. She came from the Division and her troubles were of gonorrheal origin. He asked me to see if anything could be done. I examined her and thought the pus could be removed through the vagina. The patient and her friends were ready to agree to anything that offered any hope. She had been taking about five grains of morphia daily to quiet her pains. While the nurse was getting the instruments ready the patient was gently placed in position across the bed on a Kelly pad and the vagina antiseptically irrigated. The only instruments used were Sims' speculum, curved pointed scissors, and dressing forceps. I pushed the scissors through the tissues under the cervix, and in withdrawing them separated their blades, thus dilating still further the opening. About a quart of malodorous pus was evacuated. The pelvic cavity was irrigated with hot water, and a strip of gauze inserted into the abscess cavity and the vagina loosely packed. She made a good recovery, but in about a week had to be operated on again for a similar pus collection. She made a second recovery, and, notwithstanding all the dangers she had been through, returned to her vocation, physically a well woman.

In CASE II. the abscess was situated high up on the right side, and was punctured with long, curved dressing forceps

passed through the puncture and the blades widely separated.

CASE III. I saw with Dr. Bayne on Sixth street near M. She had an abscess following a long history of pelvic trouble. It fluctuated very distinctly from below. She was taken to Providence Hospital and operated on in the operating room. The cervix was held up by the finger and the curved pointed scissors thrust into the abscess, the blades being separated as usual on withdrawal. A large quantity of pus was evacuated. With the index finger the opening in the abscess cavity was enlarged, the cavity thoroughly irrigated and lightly packed with gauze. She made a quick and complete recovery, and has remained well.

CASE IV. also seen with Dr. Crook. Wife of a druggist; age about 25; had always had dysmenorrhea, which became much worse after marriage. She and her husband were both very anxious for children. She had suffered from several attacks of pelvic peritonitis. The question of removing one or both ovaries had been several times considered. She was quite an invalid. Whenever she tried to enjoy life she was thrown down with another attack. Finally we detected fluctuation through the vagina, and the patient readily consented to a vaginal operation, although she had persistently refused abdominal section. Arrangements were made at the patient's house, and I assisted Dr. Crook in performing a vaginal celiotomy. A pair of curved dressing forceps, guided by the finger in the vaginal opening, was plunged into the fluctuating mass and the fluid evacuated, followed by irrigation and gauze drainage. She made a good recovery and is now a well and happy woman.

CASE V. was operated on at Providence Hospital three years ago. She had a similar history, similar operation, and similar recovery.

CASE VI. I saw in consultation with Dr. S. Harrison. She was the wife of a policeman, living in Anacostia. She was in bed with a high temperature, chills, sweats, and a rapid pulse. She was very ill and had been getting worse for several weeks. She was supposed to have had an abortion and to have been a victim of septicemia ever since. I saw her in the afternoon and operated the next day. Fluctuation was readily made out both through the abdomen and vagina. After the usual preparation the patient was etherized and placed upon a table facing a good light.

The posterior vaginal fornix was opened in the manner previously described. Instead of a pelvic abscess she had a suppurating hematocele, the result of a ruptured tubal pregnancy. Many large and foul-smelling clots were removed, also much pus and blood. Irrigation brought away still more. I was somewhat alarmed at a brisk hemorrhage which set in. I had no clamps or other instruments to control it. I could feel abnormal masses which I did not dare to dislodge. Hot water and gauze packing controlled the bleeding, and the patient was put in her bed in a bad condition with a bad prognosis. The gauze was gradually removed day by day until it all came away. She had a profuse and bad-smelling discharge for a week or more. Her condition finally became normal, and she made a good recovery and is well to-day. I believe if a correct diagnosis had been made and an abdominal section attempted in her weak condition she would have died on the table.

I remember well a case very similar to this which I operated on by abdominal section, doing the complete surgical procedure. She survived only two days. I am reasonably certain if she had been operated on through the vagina she would have survived the ordeal.

Dr. Kelly, of Baltimore, has recently reported thirteen cases in which he successfully operated through the vagina for ruptured extrauterine pregnancy, and many other cases have been reported in the medical journals. Cases like these can, I believe, be operated through the vagina with much less shock and risk of traumatism and infection than through the abdomen. Hanks has recently reported cases of recent rupture in which he operated through the vagina, clamping the bleeding vessels as in vaginal hysterectomy. I believe, however, that the best results will be obtained by abdominal section in those cases where the rupture has occurred into the peritoneal cavity, with hemorrhage still going on and the abdomen more or less filled with blood. In the old suppurating cases and those in which the removal of clots is not liable to be followed by fresh hemorrhage, difficult to control, if operation is needed at all it should be done through the vagina.

CASE VII. is the wife of a captain in the United States navy. She was under the care of Drs. Cuthbert and Compton and lived at Chevy Chase. She is the mother of several children and is about 30 years of age. She had been ill for about two weeks,

and the diagnosis lay between appendical abscess and pyosalpinx. I thought it might be both. She was very ill, with all the usual symptoms of sepsis. At my second visit I was certain of fluctuation through the vagina. We all thought her too weak to stand abdominal section and all that that implied, but recommended immediate operation by the vagina. This was late Saturday night. Arrangements were made to operate early Sunday morning. All the dangers and risks of the operation as well as of delay were fully explained to the family of the patient. None of us thought she would live two days unless relieved by surgery. We were requested to go ahead. The operation was performed about 9 o'clock the next day. We had grave doubts of her standing the ether, but Dr. Cuthbert gave it with great caution, skill, and success. Full preparation was made for any operation which might prove necessary, including abdominal section, removal of uterus and vermiform appendix. The patient being too ill for a general bath previous to the operation, the outside parts and vagina were hastily scrubbed and disinfected after the patient was placed on the table. The vaginal fornix was opened, the abscess punctured with the curved scissors, and a quart or more of the most offensive pus we ever smelled was evacuated. Several quarts of normal salt solution were used in the irrigation; gauze was pushed through the enlarged opening in considerable quantity, as there was some hemorrhage, and the patient put in a bed heated with hot-water bags. Within a month she was perfectly well, and has no drawbacks from what might be criticised as an apparently incomplete surgical operation. The patient was not on the table more than ten minutes for all purposes—previous cleansing, operation, and the dressing. Dr. Compton, with his hand pressed upon the right side of the abdomen, felt the fluctuating tumor disappear as the pus was evacuated through the vagina. What becomes of the pus sacs, which we have heretofore thought it so vitally necessary to carefully enucleate by abdominal section, I don't know. They must contract down and probably are absorbed. We do know this much, that they never gave this lady any trouble and that she got perfectly well and still remains so, as a most grateful letter from her husband freely testifies.

Some of these cases operated on through the vagina as life-saving procedures *do* require, later on when they can stand it, abdominal operations for separating painful adhesions and removing the unabsorbed and troublesome pus sacs.

CASES VIII. and IX. were vaginal hysterectomies on two colored women at Columbia Hospital on the same day. Case 8 had had her appendages removed several years previously for the relief of pain and hemorrhage, which were *not* relieved. She sought and found in vaginal hysterectomy a final cure. Case 9 came into the hospital supposing she had uterine cancer. A sloughing fibroid mass was removed with the curette and cauterized; but the uterus and adnexa had become infected, and, after a failure of all other treatment, the uterus and appendages were removed through the vagina on same day as Case 8.

Both operations were done with clamps and both patients made a rapid and complete recovery. They were sitting up in ten days and left the hospital within three weeks. They both visited the hospital several times during my service there and reported themselves feeling very well.

CASES X. and XI. were operated on in my sanatorium for the relief of a great variety of pains, nervous symptoms, and hemorrhage. One of them had been treated for cancer. They were both intelligent women, and were both tired out with long-continued treatment which had utterly failed to arrest their symptoms. They both requested that their wombs should be removed through the vagina. After a careful study of their cases their requests were both granted. Vaginal hysterectomy was performed by the Péan or clamp method. One of them, I have heard, is perfectly well, and the other, which was done only a few months ago, has not yet fully regained her strength. In her case the ovaries and tubes were not removed, as they appeared healthy and I did not wish to prolong a difficult operation upon a very weak patient. She is now doing well, and her husband told me within a week that he was absolutely satisfied with the operation. To use his own expression, they had been living in torments of hell for several years, and the present condition, he feared, was too good to be true. Previous to the operation he had not enjoyed the family relation for a number of years. Fears of present pain and future pregnancy had led to infrequent and unnatural practices, which had made him nervous and injured his health. His sleep had been much interfered with by attentions at night to his sick wife, and he was always in debt to his doctor. Now it was all changed. His dreams of connubial bliss were being realized. No more sleepless nights. No more running after the doctor late at night or early in the morning, to subdue the pains pro-

duced by an incomplete and one-sided effort at sexual intercourse. Since the operation he had gained fully twenty-five pounds and was one of the most satisfied and happiest men in Washington.

CASE XI. was a lady on Florida avenue whom I saw at the urgent request of, and in consultation with, Dr. Tarkington. She had previously been operated on by abdominal section unsuccessfully in one of the city hospitals; that is, the abdomen had been opened, and the omental and intestinal adhesions had been found to be so great that it was considered too dangerous to proceed, and the abdomen was closed, and, according to the statement of the patient, something ineffectual was done from below. She was taken home and was very ill for a long time with all the usual symptoms of intense sepsis. Her chart was several yards long, its high peaks and depressions resembling a side view of the Rocky Mountains. She was so greatly emaciated that I scarcely remember to have seen so great a wreck in human shape. It took some courage to turn her about in bed, for fear she would break in two. She had had a discharging sinus for several weeks, but that had closed up. Dr. Tarkington gave her chloroform, and I made a free opening into Douglas' cul-de-sac and let out a large quantity of pus, irrigated with hot salt solution, and put in a gauze drainage. She gradually grew better, and as I was going to Europe I requested Dr. Fry to take my place. After seeing her several times he detected pus on the other side, and strongly insisted on vaginal hysterectomy as the best means of a cure. After consultation it was agreed that Dr. Fry should operate the next morning, as I was to leave that day. The patient, at the last minute, refused to have a comparative stranger operate, and Dr. Fry, who was all ready to go ahead, kindly and very gracefully yielded to her whim and turned all his paraphernalia over to me. I began the operation as a vaginal hysterectomy, making a free opening posteriorly, and then exploring with the finger. I was able this time to so thoroughly tear out the bottom of all the pus sacs that I did not think hysterectomy necessary, and, against the advice of my colleague, I washed out the cavity and packed liberally with gauze. To make a long story short, the patient slowly improved and finally got entirely well. She came several times to my office to pay instalments of her bill, and reported herself not only as well, but that she was having her regular monthly periods. An

abdominal or vaginal hysterectomy would have prevented future menstruation or pregnancy.

The uterus in these cases is sometimes so involved in the septic conditions that its removal is necessary to a cure. This case not only proves that it is not always so, but proves also that the ovaries and tubes are not always completely destroyed in the worst form of septic abscess. Objection is frequently made that vaginal section, irrigation, and gauze drainage is an unsurgical and incomplete procedure, and that the pus sacs and adhesions have to be liberated and removed later on, by the same or some other surgeon, from above. This and many hundreds of other published cases prove the objection untenable. It is not necessary to the patient's symptomatic recovery that the *complete* procedure be always done, from above or below.

Experience abundantly proves that with the complete discharge of the offending pus, antiseptic or even hot-water irrigation and free drainage through the vagina, the patient will get entirely well without the use of knife, ligature, or suture. The peritoneal cavity, being walled off by adhesions, is not opened, and none of the disagreeable consequences follow which so frequently annoy the patient and her surgeon when he has manipulated for a long time in the pelvic cavity after celiotomy. I doubt if I hazard anything by the suggestion that the combined sufferings of the patient operated on through the abdomen are much greater in many pus cases than when vaginal section is done and absolutely nothing is removed but the offending pus. No partisan will be bold enough to say that many accidents are not liable to occur during the performance of the complete surgical operation through the abdomen, in complicated and adherent pus cases. Many experts seem to take pride in reporting the length of time required to thoroughly and completely dig out and enucleate the tubal or tubo-ovarian abscess sacs; the number of bowel tears carefully sutured; rents in the bladder or ureter mended; the number of ligatures required and hot sponge pressure and gauze packing to arrest troublesome bleeding; the tedious covering of raw surfaces with peritoneum or omentum; the inserting of strips of gauze among the intestines to prevent adhesion of raw surfaces; and the different tiers of sutures, anywhere from three to eight, to close the abdominal incision.

We all have received reprints of papers giving glowing accounts of abdominal operations for fifty or one hundred and fifty pus cases with from fifteen to twenty-five per cent mortality among their first operations.

The moral which I wish to draw from this discussion is that many of these pus cases could be operated on through the vagina by the simple, safe, and rapid process which this paper has been written to draw fresh and emphasized attention to. It is believed by many modern surgeons that by adopting this method more frequently the mortality would be greatly diminished, if not almost completely abolished.

The following and last case (CASE XII.) which I shall report will illustrate this point. Last April I was requested by Dr. Bromwell to see the wife of a prominent naval officer with him. She had had an incomplete miscarriage two weeks previously. He had seen some of the discharges, but was not sure everything had come away. One night she had a chill and her temperature rose to 104°. I saw her the next morning and felt a large mass posteriorly, which seemed to us both very like the enlarged retroverted uterus. Dilatation and curetting was discussed, but was delayed, partly because she refused to have it done, and partly because her symptoms had somewhat improved. She went on suffering considerable pain, with occasional chilly sensations and varying pulse and temperature; abdomen distended and some peritonitis.

The mass in the pelvis still felt like the enlarged fundus uteri. There was very little discharge and no odor. There was no fluctuation through the vagina, but we could feel a round mass rising slightly higher each day in the left side of the abdomen. The American Gynecological Society was holding its session in Washington at that time, and I asked permission to bring Dr. Mundé, its newly elected president, to see her. He examined the patient with great care, moving her across the bed with legs greatly flexed. He thought he made out a small uterus anteriorly and that the posterior mass was made up of exudate. He strongly recommended that nothing be done to disturb the patient in any way, not even hot water douches, and the gentlest kind of infrequent examinations to keep in touch with the situation and note any particular change, which he thought unlikely to occur very soon unless this exudation became infected. He thought she would recover, but that she would be confined to her bed probably

two months longer while absorption was going on. This advice pleased the family, and the do-nothing policy was carried out for another week, we in the meantime keeping close watch. One day she had another chill and elevation of pulse and temperature. After a day or two more I was sure I felt a boggy sensation, and the next day Dr. Bromwell and I were both sure we could feel fluctuation above and below, and we both recommended an opening through the vagina. As Dr. Mundé had spoken so strongly against any operative interference, we thought it best that some other physician should share with us the responsibility of operative interference. Accordingly, after conference, Dr. Stone was called in. We met at noon, and as he agreed with us as to the presence of pus and the necessity of its immediate removal, 4 o'clock that afternoon was fixed for the operation. With the patient under ether, on a table before a good light, with the assistance of Drs. Bromwell and Stone, I opened the vagina behind the cervix and let out a quart or more of bad-smelling pus. With the finger the bottom of the abscess was torn out, and after free irrigation and iodoform-gauze packing the patient was placed in bed, after having been less than fifteen minutes on the table. She did well as long as the drainage was free. When the opening was clogged or grew up she would have chilly sensations and the pulse and temperature would rise. The opening was dilated twice and the cavity washed out several times, after which she made a complete recovery. I met her last month walking on Connecticut avenue with her husband, and they both declared that she was entirely well. She must have gained twenty pounds at least, and looked fat and rosy. At the time of the operation I doubt if she would have survived the complete abdominal operation. The sequel certainly proves that it would have been unnecessary.

This ends my report of cases. They have been intended to emphasize the conviction which has been growing in my mind for some time that many, if not the great majority, of these bad pelvic pus and old blood collections could be much more quickly, easily, completely, and safely evacuated through the vagina than through the abdomen.

If these statements be admitted as true, then it must follow as an indisputable corollary that it is our duty to cultivate this method of operating in the interest of humanity and good surgery.

The growing tendency of the French school of pelvic surgery

to remove the uterus as a rule in the class of cases above reported seems to me to be going a very important step too far. I believe, in the small number of cases where its removal is wise or necessary, that it is better practice to remove it through the vagina.

The arguments in favor of removing the uterus where both ovaries and tubes have been removed on account of pus are too familiar to you all to require repetition here. Rigid rules of practice are as unwise here as in regard to operations for appendicitis or any other surgical condition. The entire field should be carefully surveyed, all the circumstances of the patient's condition thoroughly considered, and the kind of surgical procedure best adapted to do the most good in her particular case should be selected. To always insist that abdominal surgery be practised to remove pus from the pelvis would, in my opinion, be abominable surgery.

One of the good effects which have followed the recent revival and improvements of the vaginal method of operating has been its extension to other classes of cases. Much has been done through an anterior opening above the cervix. One of the members of this Society recently read us a paper upon anterior colpotomy, in which he eloquently portrayed the variety of surgical operations not only possible but more easy and safe by this method. Small fibroids and ovarian growths can be drawn down into the vagina and removed; vaginal and vesical fixations of the retroverted uterus have been done, the round ligaments shortened, adhesions separated. Safe and effective explorations can be made through either an anterior or posterior colpotomy, and the question determined when in grave doubt whether a further operation is required, and, if so, whether the vaginal or abdominal route offers the greatest advantage to the patient. If the vaginal route be decided upon the operator can proceed at once, the preliminary work being merely one of the steps of the operation. If the abdominal route be chosen the posterior vaginal opening could be utilized for drainage. Not a few good operators have recently substituted vaginal for abdominal drainage, when any is necessary.

Without further remarks upon this very attractive and interesting subject, the following summary of advantages of vaginal over abdominal section, especially for pus in the pelvis, is submitted for discussion:

It is claimed by too many good surgeons to admit of doubt that:

1. The vaginal section is very much more quickly done than the abdominal, and the convalescence is much shorter.

2. There is little or no shock.

3. The peritoneal cavity being seldom opened in these cases, except when hysterectomy is done also, much less traumatism occurs to intestines, bladder, ureters, omentum, or abdominal wall, to greatly prolong difficult and dangerous operations.

4. Drainage, being down-hill, is not opposed by the laws of gravity, and is more natural, safe, and copious.

5. There is no ugly scar to annoy the eye and develop a painful keloid or permit a ventral hernia.

6. The mortality of the vaginal operation for pus, is vastly less than in that of enucleation of tubo ovarian abscesses from above in the badly adherent and complicated cases.

7. Experience has abundantly proved in more than a sufficient number of cases that the removal of the abscessed organs is not necessary to a symptomatic cure, and that a permanent and complete restoration to health is the rule, while a secondary operation later on is the exception.

8. Should a secondary operation from above become necessary, its performance would be much easier and safer, on account of the freedom from pus and the improved condition of the patient.

9. The perfection of the operation for draining double pus tubes through the vagina has opened the way for many other *beneficent* operations from below, including anterior and posterior colpotomy, explorations, hysterectomy, etc.

10. Many patients who fear and will not consent to celiotomy with its possible accidents, including intestinal injuries, the post-operative sequelæ and the scar, the stitches, the bandages, the troublesome supporter for six to twelve months, and the possible hernia, will readily consent to vaginal incision and drainage, and vaginal hysterectomy when necessary.

11. Vaginal hysterectomy with the ovaries left *in situ* is followed by much less nervous and physical disturbance than when the ovaries are removed and the uterus left, or than when they are all removed at the same time.

12. If any or all of these advantages are admitted in favor of the vaginal operation over the abdominal, then it must follow that it is our conscientious duty to operate by this route more frequently in the future than we have done in the past.

CONGENITAL PELVIC KIDNEYS OBSTRUCTING THE
PARTURIENT CANAL,

WITH THE REPORT OF A CASE OF VAGINAL NEPHRECTOMY.*

BY

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CONGENITAL misplacement of the kidney within the pelvis, although a rare anomaly, occurs with sufficient frequency to be of interest and importance both to the obstetrician and the gynecologist—to the former as a possible cause of dystocia, to the latter as a condition to be diagnosed from pelvic tumors.

In this paper we shall not consider the subject of floating kidney in any of its phases. We are here solely concerned with kidneys congenitally located, wholly or in part, within the cavity of the pelvis.

Some idea of the frequency of the occurrence of congenital pelvic kidneys may be gained from the analysis by Henry Morris¹ of the autopsy records of the Middlesex and Guy's Hospitals. He found that in over 8,800 autopsies there were 10 instances of congenital pelvic kidney, or, in round numbers, 1 in about 1,000 cases.

The three features which mark the misplacement as congenital are : 1. The lack of mobility. 2. The shortness of the ureter. 3. The arrangement of the blood vessels.

While floating kidneys are much more commonly found upon the right side than on the left, the reverse holds good with congenital pelvic kidneys. Of 40 cases of the latter found in literature up to the year 1869, in 5 the kidney was the right and in 35 the left. Of 21 cases studied by Roberts,² 6 were right kidneys and 15 were left. Of 15 cases of congenital pelvic kidney which the writer found reported since the year 1869 and in which it was stated on which side the kidney belonged, 14 were left kidneys. The suprarenal capsule by no means always follows the kidney in its misplacement. Of 8 cases observed by Newman, in 5 the suprarenal capsule was in nearly its normal position. The kidney of the opposite side, in the vast

* Read before the American Gynecological Society, at its twenty-third annual meeting, held in Boston, May 24-26, 1898.

majority of cases, is present and in its normal position. In only 1 of the 16 cases studied by the writer was there but one kidney.

The arterial supply of the misplaced kidney arises, as a rule, from one of the common iliac arteries, or occasionally from the aorta just above its bifurcation. This renal arterial supply may consist of three or four vessels instead of one. Malformations of the genitals (Müllerheim³) are sometimes met with in connection with these congenital pelvic kidneys. There may be an absence of the Fallopian tube of that side or defects in the uterus or vagina. The rectum may be pushed to the right by the left kidney. Symptoms from the presence of the kidney in the pelvis are unusual; pressure symptoms, however, may occur if hydronephrosis is present in the misplaced organ.

Many writers have mentioned the possibility of dystocia arising from these congenital pelvic kidneys. I have been able, however, to find but 5 cases reported, and to these I would like to add a sixth.

The first case found reported was that described by Hohl.⁴ During the delivery of a patient the midwife in attendance noticed a firm tumor, behind and to the left of the uterus, which bulged forward with each pain. The fetus, however, finally passed the tumor and was delivered. Two years later the woman was delivered a second time and the tumor again felt. The patient died at the age of 75, and the autopsy showed that the tumor felt during her deliveries was the left kidney lying to the inner side of and below the psoas muscle.

The second case occurred in Gusserow's clinic and is described by Hüter.⁵ The patient had a kyphotic, transversely narrowed pelvis and in addition suffered from defective heart action. A tumor lying in front of the upper part of the sacrum was diagnosed a left kidney. The first labor was induced at the thirty-third week, the child living twenty-four hours. The second labor was also induced, soon after which the patient died of edema of the lungs. On autopsy the diagnosis of misplaced pelvic kidney was verified. The report of the autopsy is published by Freund and the specimen is preserved in the museum at Strassburg. The left kidney lay on the upper part of the sacrum; it was of oblong shape and had two arteries.

The third case was observed in Breisky's clinic and is described by Wilhelm Fischel.⁶ In the posterior part of the pelvis and to the left of the promontory was felt a tumor having the form and size of a small kidney. The upper contour was concave like the hilus, and one pulsating vessel was felt. The

woman had already passed through three confinements, all of which were difficult and in one of which the child was born dead. The tumor was discovered in the third confinement. She was now pregnant again. Labor was induced at the thirty-fifth week and a living child obtained.

The fourth case is reported by Runge.⁷ A woman presented herself with the history of having borne seven children. With the exception of the fifth child, all were born alive and without medical aid. The fifth was a transverse presentation and resulted in a dead child. On examination the patient was found to have a flattened, rachitic pelvis, to be pregnant three months, and to have two tumors aside from the pregnant uterus. One at the right, clearly to be felt through the abdomen, was diagnosed an ovarian cyst. The other tumor was only felt on vaginal examination, and from its shape was diagnosed a kidney. At the fifth month celiotomy was performed, and the ovarian cyst, a dermoid, was removed from the right side. The tumor in the pelvis was then distinctly palpated. As six children had been born alive, it was thought best to allow the pregnancy to advance to the ninth month and then induce premature labor. This was done, and a difficult version performed, the right arm of the child being fractured in the extraction. After the delivery the misplaced left kidney was carefully palpated. It was fixed in position, with its hilus directed upward and to the left.

The fifth case is reported by Albers-Schönberg.⁸ The patient was pregnant for the third time. Her previous labors were long and difficult, the first child being born dead. The second child, however, survived. The third labor began at 2 A.M., and, until the afternoon, was under the direction of a midwife. At 4:45 P.M. a physician who was summoned found the patient in a state of collapse. Examination under anesthesia disclosed a ruptured uterus. The child was extracted and the patient treated symptomatically. She died on the fifth day. The autopsy showed, as a cause of the dystocia and rupture of the uterus, the left kidney lying fixed in the pelvis, the upper pole being opposite the promontory of the sacrum, with the hilus of the kidney directed to the right. The left renal artery arose just above the bifurcation of the aorta.

The case which I now wish to report was Mrs. M., seen by me in consultation with Dr. H. M. Painter, of New York, May 8, 1897. The patient was 25 years old, a native of Cuba. She

had passed through two previous pregnancies, each terminated with a difficult delivery, the first by forceps, the second by version. She was then pregnant eight and a half months. Behind the cervix was an elastic tumor reducing the internal conjugate to about seven centimetres. The external measurements of the pelvis were normal, and the previous increasingly difficult deliveries seemed both to Dr. Painter and myself to have been due to the same tumor which now obstructed the canal, and which during the present pregnancy had increased in size. After a careful examination and study of the case it seemed impossible for a living child to be born per vaginam without the removal of the tumor. As the tumor lay low in the pelvis, the vaginal route was selected. After incision of the vaginal wall the tumor was tapped and then carefully palpated. Our cystic tumor was found to be a distended left kidney fixed beneath the promontory of the sacrum and with its hilus directed upward and to the right.

As the urine passed during the pregnancy had been abundant and normal, and the kidney even after the tapping produced a marked obstruction in the parturient canal, a vaginal nephrectomy was decided upon. This was performed, with the able assistance of Drs. Painter, Comstock, and Mathews, by first clamping the vessels and ureter at the hilus of the kidney, removing the latter close to the clamps, and then replacing the clamps by ligatures. A narrow strip of gauze was carried up through the wound in the vagina and pressed firmly against the pedicle. The operation was completed at 12 M. May 16, 1897. A few intermittent uterine contractions occurred at 1 P.M. These were subdued for a time by hypodermatic injections of morphine, but recurred at intervals during the afternoon and evening. At 8 P.M. ten ounces of normal urine were withdrawn by catheter. A 2 o'clock on the following morning true labor began, and at 5 A.M., seventeen hours after the operation, a well-formed female child was delivered with ease. The convalescence of the mother was uneventful and the development of the child satisfactory. Measurement of the pelvis at the close of the puerperium gave the true internal conjugate as ten centimetres. From the history of the previous difficult labors, and from the ease of delivery after the removal of the misplaced kidney, there remains little doubt that the kidney was the cause of the previous dystocia.

From a study of the six cases here presented we conclude

that, although the occurrence of congenital pelvic kidneys is rare, such a condition does occasionally exist, and when present in married women may cause dystocia which is extreme.

It is only fitting, after an operation of this kind, to consider whether under the circumstances the procedure adopted was the best one.

If the kidney had not been in a condition of hydronephrosis, induction of premature labor at the thirty-second or thirty-third week would probably have resulted in the delivery of a living child. With the kidney forming a cyst, as here obtained, it was agreed by all three of the consultants who saw the case that induction of premature labor would not have accomplished the desired result.

Another suggestion presents itself, viz., the possibility of a Cesarean section followed by an attempt at replacement of the misplaced kidney. Although this thought occurred to me after the operation, it was set aside as impracticable on account of the low origin of the renal vessels, the shortness of the ureter, and the fixity of the kidney.

Careful consideration of the case since the operation has only confirmed me in the decision reached at the time of the operation—that, under the circumstances, the best procedure in the interests of both mother and child was a vaginal nephrectomy.

One cannot but think of the possible outcome of the case had the pelvic kidney been the only one possessed by the patient.

Judging from the cases reported, a congenital pelvic kidney is not usually the only kidney present, and yet that such an occurrence is possible is proved by the case reported by Lambert, where, in a man of 50 years, there was found at autopsy an absence of the right kidney and ureter, and the left kidney fixed in the hollow of the sacrum.

In the writer's case the diagnosis of kidney was not made until the vaginal incision had disclosed the cystic tumor. The absence of the right kidney was then excluded by the previous history of abundant normal urine, and the hydronephrotic condition of the left kidney disclosed in the field of operation. We all learn by experience, and in another case, suspecting the possibility of a pelvic kidney being the cause of the dystocia, I should endeavor by catheterization of the ureters to prove the presence of both kidneys.

As a result of our study we conclude:

1. That pelvic kidneys may cause dystocia.
2. That, as a rule, induction of premature labor, timed ac-

according to the amount of obstruction of the parturient canal, is the procedure indicated.

3. That in rare, exceptional cases, where the pelvic kidney is in a condition of hydronephrosis, vaginal nephrectomy may be advisable.

After a considerable search through the literature of the subject the writer has failed to find reported another case of vaginal nephrectomy.

62 WEST FIFTIETH STREET.

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THE PORRO OPERATION VERSUS TOTAL HYSTERECTOMY.¹

BY

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(With one illustration.)

DURING the latter part of 1876 Edoardo Porro published his memorable paper on Cesarean section according to the method now bearing his name. His fertile brain had found a technique superior, in the saving of maternal lives, to the Cesarean section as then practised. It was Porro's intention to introduce an operation which would be safer for the mother and equally as safe for the child as the ordinary Cesarean section. Sänger, of Leipzig, had not formulated the ingenious technique which has made it possible to go even beyond the absolute indication in the performance of Cesarean section, and, so great are the achievements obtained by the latter's method or some modification of it, to venture the operation for what we know as relative indications.

¹ Read before the American Gynecological Society, May 24, 1898.

For the Porro operation, however, the indication has and always will remain the same. As with Sängers method of suturing the uterus in the sectio Cesarea, so have modifications been made in the Porro operation; they have, however, no important bearing, because the chief point in the technique involved must necessarily remain the same if the operation should bear his name—namely, the extraperitoneal treatment of the pedicle. When we come to such changes in the technique as the intraperitoneal treatment of the stump, as by Schröder's method, or the inversion of the pedicle by King's¹ or Bartlett's² method, then we are not dealing with "*Porro's*" operation, strictly speaking, although the object of Porro is attained, in so far as the amputation of the parturient uterus at full term, or nearly so, is concerned.

Another reason why the intraperitoneal treatment of the cervix after the method of Schröder should not be classed with the operation described by Porro is because the results of the method have shown it to be inferior, so far as the maternal mortality is concerned.

Breisky,³ in the publication of his first case, says that Porro's operation may become impossible or not feasible if neoplasms in the collum uteri cause the obstruction to the normal termination of labor. Under such circumstances Freund's total extirpation of the uterus must be considered. Schröder did not look upon the Porro operation as the one of the future, but rather as one of the intermediate stages. The finals I believe to be the modified Cesarean section for the relative indications, and total hysterectomy for absolute indications.

It is this total extirpation of the uterus which I purpose to consider in contrast to the supravaginal amputation of Porro. In the discussion of a paper by Dr. A. Vander Veer⁴ on "*The Present Treatment of Fibroids Associated with Pregnancy*," before the New York State Medical Society in January, 1897, I took the firm position that a total hysterectomy should be performed in preference to the supravaginal amputation with extraperitoneal treatment of the pedicle. I not only still adhere to this, but desire to urge this procedure more emphatically. Though formerly of the opinion that the extraperitoneal opera-

¹ AMERICAN JOURNAL OF OBSTETRICS. April, 1884.

² Journal of American Medical Association, October 2, 1886.

³ Archiv. für Gynäk. vol. xiv., p. 113.

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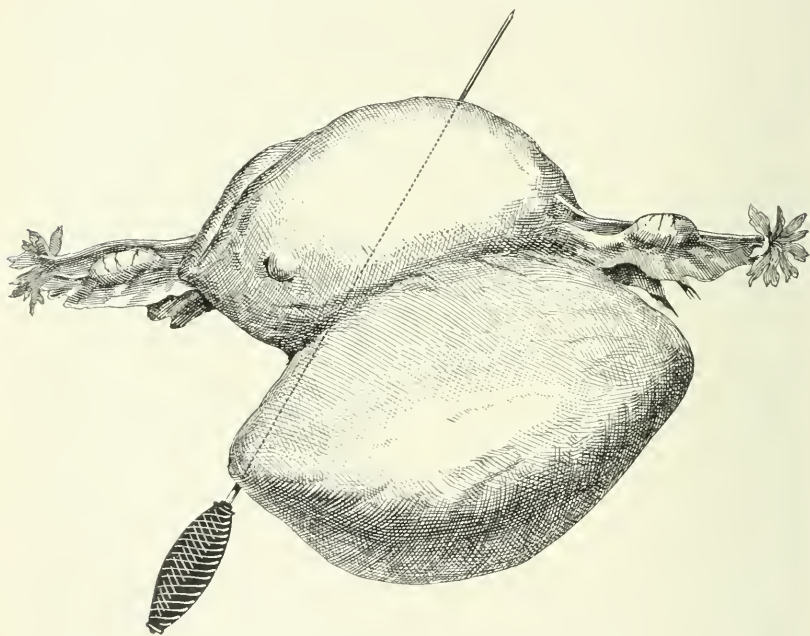
tion could be done more rapidly, I have since convinced myself that this is an error.

By having many times used all of the various methods in vogue when operating for myofibromata. I find that with the technique which I now employ in doing total hysterectomy the operation can be completed nearly as quickly as an extraperitoneal operation. The argument that there is a difference between a non-pregnant uterus removed for a neoplasm and one which is gravid, because of the greater distension of the blood vessels and lymphatics in the latter condition, has no practical significance, as I have been able to prove in three such instances. On the contrary, judging from the experience of my cases, it is easier to remove a gravid uterus at term or in advanced pregnancy than a non-impregnated uterus.

The three instances which bear me out in the statement as to the comparative ease and safety of the operation advocated were two cases of fibromyomata with advanced pregnancy, upon whom it became necessary to operate on account of profuse hemorrhage from impending miscarriage, the size and location of the tumors being such that I considered it too risky to endeavor to terminate the condition *per vias naturales*, especially as an operation for the removal of tumors was indicated. One was admitted to my service in the Post-Graduate Hospital and the other in St. Mark's Hospital. Neither had reached quite seven months of pregnancy, so that they should, strictly speaking, not be included for comparison with the Porro operation; yet the technique of the operations was exactly the same as though the patients had gone to the full termination of gestation, hence I include them as examples.

The third case was a woman 30 years old, who consulted me in my clinic during the latter part of 1896 on account of inability, during the two years of her married life, to properly comply with marital duties, and sterility. Examination showed that the vagina was a closed pouch about one and one-half inches long; in the centre of the roof was an opening, so small that it was impossible to introduce the smallest size surgical probe. The menstrual history was that the period began to be regular from the thirteenth year; the amount of blood lost was small, and the flow of from one to two days' duration, without pain. Recto-abdominal examination showed the uterus to be of normal size and freely movable. The right ovary could be felt to be apparently normal; the left could not be palpated. It was evident from the history that the atresia was not complete and

that a connection existed between the vagina and uterus, so all that would be required would be a plastic operation, which I proposed to perform. I did not see her again until the latter part of February, 1897, when it was determined that, despite the existing atresia, the woman had conceived. The recto-abdominal examination also showed the presence of a small tumor to the left side of the gravid uterus, which seemed to be in direct connection with the lower segment of the organ. The patient did not present herself again until some weeks later, when it was found that the tumor had increased so much in



The tumor springs from the left side of the cervix and is developed entirely intra-ligamentous. The uterus before operation rested on the tumor, which actually formed a shelf for it. The cervix, after being in alcohol more than a year, still measures $4\frac{1}{2}$ inches from the os externum to the os internum. The sound passes through the cervix and fundus.

size that it was as large as the gravid uterus, which was pushed up and to the left side by the fibroid, which I diagnosed the neoplasm to be. I advised waiting until the termination of pregnancy, and then to do a Cesarean section and at the same time remove the tumor. On August 7, 1897, she was admitted to my service in the Post-Graduate Hospital, where the following additional notes were taken: Heart, lungs, and kidneys normal. The abdomen is divided by an oblique depression into

two parts. The upper right part contains the gravid uterus, the fundus of which reaches up to the ensiform cartilage; the organ encroaches upon the liver. The lower and left part of the abdomen is occupied by a large solid tumor, evidently attached to the uterus; the tumor fills out the entire true pelvis. The patient being then within ten days to two weeks of the normal termination of pregnancy, and the heart sounds having become somewhat feeble during the past few days, I thought it best to operate without longer waiting for the beginning of labor, and therefore on August 10 I did the operation according to the technique described below.

The time required from the beginning of the operation until the patient was ready to be taken off the table was fifty minutes, which is certainly not more than would have been required for an uncomplicated case of Porro's operation. The child died on the eleventh day. The tumor, which was thought to be an ordinary fibromyoma, proved to be a fibrosarcoma, according to the report of the pathologist, Prof. Brooks. So far the mother has had no recurrence of the sarcoma. Some parts of the tumor show only fibromyomatous structure.

The technique employed is very simple. After the ordinary preparations, in which I include a tight packing of the vagina so as to elevate the cervix as high as possible into the pelvis and to better enable one to feel the junction between vagina and cervix, the abdomen is opened with a sufficiently long incision to lodge the uterus externally¹ (Müller's proposal). Then long clamps are placed outside of the tubes and ovaries, the uterus is rapidly opened, and the uterine contents delivered without an elastic ligature having previously been adjusted around the cervix, but the abdominal cavity should be first protected with large towels and the parietes drawn together with a temporary suture. Next the bladder is separated from the cervix, another clamp is placed so as to include the remaining part of the broad ligament on either side, and then the broad ligaments are separated, care being taken to cut as close to the cervix as possible, so as to keep to the inside of the ramification of the uterine artery. The vagina is opened first behind the cervix, from whence it is then easy to liberate the remaining part of the cervical attachment quite rapidly. In the case from which I obtained the specimen presented, the time required, from putting a knife on the abdomen to the complete extirpation of the uterus with tumor, was twelve

¹ Centralbl. für Gynäk., No. 5, 1878.

minutes. In those cases upon whom the operation is indicated, with a *dead* child *in utero*, especially if there is the slightest indication of infection, I would caution the operator not to open the uterus at all, but to do the complete operation with the uterine contents *in situ*, because of the danger of accidentally infecting the peritoneal cavity with the putrid uterine contents when the organ is incised and the child extracted, as has been the case in some of the instances reported. The most time is required subsequently in making the abdominal toilet. All blood vessels seen protruding from the bite of a clamp are caught with Péans; then the clamp is released gradually, so that if a vessel is still seen to be bleeding the instrument can be immediately retightened and the vessel secured. The arteries are ligated separately with very fine catgut. By observing the rule as to the keeping inside of the ramification of the uterine arteries, above alluded to, I have been able, in a few instances of total hysterectomy for fibromyomata, to get along with one ligature for each ovarian artery; rarely more than four to six ligatures are used. After all the spurting vessels have been secured the peritoneum of the cut surface is closed, beginning at the upper part on either side, with a continuous catgut suture. The vagina is brought into distinct view by catching it with a pair of forceps on the anterior and posterior wall, and then securing it by its lateral surface with the same continuous suture, as high up in the pelvis as is deemed proper to prevent the possibility of a subsequent descensus of the vaginal tube.

Usually the vagina is closed and the suture is continued in the same manner to the apex of the other side.

From the description it will be seen that the technique advocated is identical with that employed by me for total hysterectomy for fibromyomata.

Finally, the parietes are closed in tiers, using chromicized gut for the fascia and skin; for the latter the subcutaneous method of Marcy is employed. In my cases there has been no incident of note adverse to an uninterrupted recovery; unquestionably there need be less anxiety with complete extirpation than with a supravaginal hysterectomy.

Total extirpation of the pregnant uterus has been suggested as early as 1768 by Cavallini,¹ surgeon to Santa Maria Nuova Hospital in Florence, and subsequently by a number of others. By whom it was, however, first put into practice I am unable

¹ Robert P. Harris, "Am. Syst. of Obst.," vol. ii., p. 263.

to ascertain; the first case which I find recorded is the instance by Dr. H. C. Coe¹; the result was favorable.

The case of Spencer Wells,² which is reported fifteen years before Coe's case, I cannot concede as strictly belonging in this category, because the operation was performed before viability of the child—namely, at the sixth month—for cancer of the cervix.

The indications for the operation can be briefly summarized by stating that in all cases of absolute indication for Cesarean section the complete extirpation of the uterus should be preferred.

The absolute indication for removal of the entire uterus must be considered to be present.

1. In all women who have a living child *in utero*, at term or nearly so, in whom the pelvic diameters are too small for the delivery of a living child per vias naturales.

2. When the child *in utero* is dead and an infection of the organ has taken place.

3. In cicatricial contraction of the vagina to such an extent as to prevent delivery through the normal route.

4. When a neoplasm is present in the collum uteri, preventing the passage of a living child, and the enucleation of such neoplasm is not feasible at the time of the Cesarean section with safety to the mother.

5. In cases of rupture of the uterus in which an abdominal section is indicated and suture of the uterine wound is unsafe.

6. In some cases of hemorrhage from atony of the uterus subsequent to Cesarean section, as in a case reported by Clivio³ in which he had completed the uterine suture, and, although no blood oozed from the stitch holes, the hemorrhage per vaginam was so terrific that he found it necessary to change the ordinary Cesarean section to a Porro operation. This author collected sixteen cases of similar character. (Perhaps an intrauterine gauze tamponade or steam vaporization may answer in some such cases.—H. J. B.) In cases of advanced cancer of the cervix, however, the "Porro operation" should receive the preference over total extirpation or the modified Cesarean section.

So far as the mortality of the "Porro operation" is concerned, it has been greatly exaggerated in published statistics,

¹ New York Polyclinic, April, 1896.

² British Medical Journal, October 29, 1881.

³ Sperimentale, 1894, Nos. 31 and 32; Centr. f. Gyn., vol. xix., p. 833.

as Truzzi¹ very correctly stated. He does not class dropping of the pedicle, or operations for ruptured uterus or those performed on a dying mother, as belonging in that category; neither those in whom gestation is not at term or nearly so. I do not wish to press the profession to the acceptance of my views without showing good reason; for my argument, therefore, in the cases collected I have only selected those in whom no doubt could exist that the cause of death, as shown by the autopsy (none being accepted unless such was made), was due to the method—namely, the extraperitoneal attachment of the cervix. All the cases in which the cause of the fatal termination was stated as septicemia or peritonitis, without the cause being definite as coming from the cervix. I have excluded.

Bompiani² reports a case, operated upon by Pasquali, of death on the fifth day from peritonitis, the cervical pedicle with écraseur chain having slipped into the peritoneal cavity on the fourth day.

Ernst Braun,³ *sectio Cesarea* after Porro-Müller. Death on the fifth day. "The uterus had been removed to the cervix; the respective surface of amputation was putrid and gangrenous. In the left parametrium there was a disintegrating putrid blood coagulum."

Rumpe⁴ had a death ninety hours after operation, which was due, according to him, to unusual meteorisms of the intestines from adhesions of the bowel to the cervix, which had a point of gangrenous necrosis.

Von Weber⁵ had a case with secondary hemorrhage from the pedicle seven hours after operation, which was stopped by cauterization and suturing. Death two days post operationem from purulent peritonitis, fever beginning after the bleeding.

Carafi's⁶ patient had severe pain in the abdomen a few hours after operation, ceasing after the administration of morphine. On the following morning there was elevation of temperature, nausea and vomiting, with death rapidly ensuing. The autopsy showed a hemorrhage from the pedicle. (Case is not clearly comprehensible to me.—H. J. B.)

¹ *Annali univ. di Med.*, Mailand, 1884.

² *Annali di Ostetr.*, October, 1881.

³ *Centralblatt für Gynäkologie*, 1882, No. 25.

⁴ *Ibid.*, 1883, No. 11.

⁵ *Allgem. Wiener med. Zeitung*, 1883, Nos. 2 and 3.

⁶ *Progrès méd.*, 1882, No. 32.

G. Schmalfuss¹ recommends as an improvement in the Porro operation to put a drain in the cervical canal in those cases in which there is reason to believe that an infection of the uterus and cervix has taken place by failure of previous attempts to deliver. This recommendation is made because the autopsy of the case reported by him, which was operated in the Freiburg-i.-B. clinic, showed that the source of infection came from the cervical canal. Death had taken place three days after operation.

Fibbi² lost a case twenty-four hours after operation from collapse due to hemorrhage from the left parametrium. (Slipping out of the constrictor?—B.)

Klotz,³ of Dresden, found it necessary to reopen the abdomen on the fourth day to separate some coils of intestine which had become adherent to the cervix at the constriction and caused complete intestinal obstruction. The patient committed suicide during the following night, probably fearing another operation.

Peters⁴ lost a case of Porro operation on the ninth day from circumscribed peritonitis and pneumonia. The peritonitis he traced to infection from the cervical canal.

P. Strassmann.⁵ The operation was necessitated by obstruction to labor caused by vaginal fixation. (The indication was absolute, according to the description of the case.) Death, caused by acute anemia, one and a half hours after operation. Although the bleeding did not come from the cervix nor the parametrium, but from a tear in the vaginal vault, the extra-peritoneal fixation of the pedicle can be held accountable, because had the uterus been removed *in toto* no subsequent bleeding could have taken place from such point.

Rossa⁶ had a death fifteen days after operation, due to intestinal obstruction caused by coils of intestine becoming adherent at the point where the cervix was united with the parietal peritoneum. The adherent ileum had a twist of 180°.

¹ Centralbl. für Gynäk., 1884, No. 14.

² Annali di Ostetricia, 1885, Sept. and Oct.

³ Centralbl. für Gynäk., No. 22, vol. xi.

⁴ Transactions of Vienna Obstet. Soc., Nov. 6, 1888. Centr. f. Gyn., No. 10, vol. xiii.

⁵ Transactions of Berlin Obstet. Soc., June 28, 1895. Centr. f. Gyn., vol. xix., No. 31.

⁶ Wiener klinische Wochenschrift, 1893, No. 16.

H. Salus¹ suggests the total extirpation in cases of infected uteri. In his case, which terminated fatally on the sixth day from peritonitis, it was absolutely shown that the mucosa of the cervix was the seat of septic inflammation; although he treated it retroperitoneally, he believes that its presence was a factor in the production of the peritonitis.

The eventration of the uterus, which Müller insists upon and which many have practised, may be omitted and the organ incised *in situ*, so as to make a smaller abdominal wound, but only when we have a living child. I personally do not believe that it makes an iota of difference in the recovery of the mother if the abdomen is opened so much further to permit delivery of the entire uterus, and in several respects such eventration is of decided advantage.

Summary.—1. Total hysterectomy should be performed in preference to supravaginal hysterectomy with extraperitoneal treatment of the pedicle.

2. The operation should never be performed unless absolute indications are present.

3. The uterus can be rapidly removed by applying clamps on either side and working as detailed in the technique; the difference in time consumed between a "Porro" and an ideal total hysterectomy is not more than a few minutes, because the elastic ligature is dispensed with, and the proper attachment of the cervix in the lower angle of the wound nearly equals the time consumed in ligating the vessels and suturing of the peritoneum after removal of the uterus.

4. When the child is dead *in utero*, the organ should not be opened for the purpose of first delivering it, but the uterus should be removed *in toto* unopened.

The advantages of the total hysterectomy over the Porro operation are:

1. Less danger of infection.
2. Practically no danger from secondary hemorrhage.
3. Less danger of intestinal obstruction.
4. A shorter period of convalescence.
5. Less danger of ventral hernia.

Disadvantages: It has none which will not be shown to be negative by a practical test.

54 WEST FIFTY-FIRST STREET.

¹ Prager Med. Wochenschr., 1896, No. 13.

SURGERY OF THE UTERUS AND ADNEXA PER VAGINAM.¹

BY

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IN the report of a recent discussion upon suprapubic *versus* infrapubic surgery for diseases of the uterus and its adnexa, one of our Fellows is reported to have said: "Vaginal work leaves very little room for conservatism. A man who opens the abdomen from above sees what is present and knows whether he can conserve some of the organs."

Had this statement been made by some inexperienced surgeon it would probably not have attracted my attention, for it is well known that when Ségond, Pozzi, Richelot, etc., were renowned surgeons by the suprapubic method they used similar expressions in opposition to the infrapubic work by Péan until they learned his methods, his technique, and his results; but long before the death of this distinguished surgeon they fully indorsed all that he claimed.

The final conclusion as to the best methods of surgery in any form of disease must be the result of the combined experience of surgeons, and until there is practically a consensus of opinion as to the best methods each individual must reach his conclusions mainly from the results of his own work; hence I beg to differ from the opinion that surgery per vaginam is not conservative.

In the discussion above referred to another surgeon of broad experience is reported to have said: "Vaginal surgery is dirty from beginning to end."

If the report is correct, then this surgeon does not conform to the aseptic and antiseptic requirements in surgery per vaginam that are usual in the practice of our best surgeons in pelvic operations per vaginam.

It is true that in celiotomy we may generally learn from an

¹ Read before the American Gynecological Society, at its thirty-third annual meeting, held in Boston, May 24-26, 1898.

examination of the diseased structures what should be removed and what should not be removed; but this is often based more upon the sense of touch than upon the sense of sight, for in many cases where the diseased conditions in the pelvis cannot be removed without endangering the life of the patient to a degree inconsistent with good surgery, they can be exposed only in a minor degree to the sense of sight. But when we are uncertain as to whether the uterine adnexa should be removed, or as to just what should be done, because of our inability to detect well-marked pathological lesions, then there is incalculably more conservatism in examining the adnexa and all the pelvic structures through an opening into Douglas' pouch. This operation is nearly devoid of danger, and every pelvic organ, including the uterus and the broad ligaments, can be examined by the sense of touch with the finger in direct contact. If there be adhesions, these may be separated, the ovaries and tubes pulled into the vagina, treated if necessary, returned to their proper place, and the vaginal incision closed with catgut.

While no careful surgeon would consent for these patients to get out of bed on the second day after such an operation, I am positive, were they to do so, that this imprudence would probably not result in a single death.

Certainly no one would suggest the probability of such results in suprapubic explorations. I cannot believe that it is often wise to open the abdomen for the purpose of making explorations of this kind or for separating pelvic adhesions.

It is the consensus of opinion that the Alexander operation is never indicated where there are pelvic adhesions that will not allow the womb to come freely to its proper place, although the adnexa be otherwise normal. This objection may be removed by vaginal incision and the separation of adhesions, and, when the ligaments are drawn into the suprapubic wound, the finger introduced into Douglas' pouch can detect if the uterus is in its proper place and the degree of tension indicated. When the operation is completed the vaginal incision may be closed with catgut and no serious damage will have been inflicted. The same method, I assume, may sometimes be practised where we prefer uniting the fundus of the uterus to the anterior abdominal wall; the adhesions, if there be any, having been separated, the uterus may be pressed firmly against the wall, and with the finger, introduced through the vaginal opening, the intestines and omentum pressed away from between the

organ and the wall, so that in this position a suture may be introduced through the entire thickness of the wall into the fundus of the uterus and tied externally, with but little danger of wounding intestine or omentum.

Pelvic surgery per vaginam is probably indicated in extra-uterine pregnancy before the end of the third month in a relatively greater number of cases than in any other form of disease. During the last three years I have operated for extrauterine pregnancy per vaginam about twenty-five times, each operation being completed without complication or subsequent trouble. In most cases before rupture of the tube no capital operation could be reduced to greater simplicity or the dangers more completely removed than the operation per vaginam; and if rupture has occurred into the broad ligament, or in intraperitoneal rupture where there is not excessive hemorrhage, the mortality from the operation per vaginam would be practically *nil*. While no one would contend that the vaginal method is preferable in intraperitoneal rupture with excessive intra-abdominal hemorrhage, there are many cases where vaginal incision and clamping the bleeding tube may control the hemorrhage before shock is too profound for the abdominal method, or in profound shock may control hemorrhage until the patient may be, by stimulation and proper treatment, restored to a condition that will justify celiotomy. There are many cases where the bleeding has been so profuse that shock is too great to admit of an immediate celiotomy, and, while bleeding has ceased, there is great danger of secondary hemorrhage and death as soon as we have stimulated the patient and refilled in a degree the blood vessels. In nearly all of these cases a vaginal incision may be made without even an anesthetic, the tube caught and clamped, and danger of secondary hemorrhage averted; then we may prepare the patient by the best methods, and at the proper time open the abdomen and treat the case successfully.

Vaginal incision without the removal of the uterus, ovaries, or tubes is often preferable to the suprapubic method in many cases of accumulation of pus in the pelvis. In so-called "encysted peritonitis," where there is a large accumulation of pus surrounding the uterus, roofed in above by the agglutination of the intestines and omentum by inflammatory exudations, the patient may be cured by liberal vaginal incision and drainage. The objection to this method because of our failure to separate omental and intestinal adhesions is illogical, for these

patients are relieved of nearly all symptoms by the operation, showing that continued adhesions do not cause trouble, the bowels having been evenly and regularly matted together so that gases and feces continue to pass uninterruptedly. Were these adhesions separated by the suprapubic method, the bowel would often be seriously injured, sometimes irreparably so. The dangers of soiling the peritoneum with septic pus must be seriously considered; but, granting that infection is prevented, that the adhesions are all separated without injury to any important structures, I venture the assertion that new adhesions will form and cause a more dangerous condition than in those cases where the adhesions were not disturbed in operations *per vaginam*.

In pelvic abscesses where the pus is confined in one locality, vaginal incision and drainage is the correct treatment. In nearly all cases of pus tubes the adhesions may be separated without injury to the bowel, the tubes brought down into the vagina and removed, leaving the uterus; but if both tubes are destroyed, or if there be extensive pelvic sinuses, then the uterus should also be removed, and this can be done more successfully and with less danger of injuring the bowel than by the suprapubic method.

This method was not so preferable until Ségond demonstrated the superiority in operating for such conditions by bisecting the uterus. After incising and separating the vagina from the uterus, we can easily push off the bladder and make an opening into Douglas' pouch without injuring any important structures; and when the uterine arteries and lower part of the broad ligaments have been clamped, the uterus may be easily bisected, even before the adhesions of the tubes and ovaries have been touched. Each side of the uterus may then be pulled down and the adhesions separated as they present; and by this technique we may see more of the tissues with which we are dealing than we do in similar cases by the suprapubic method, where we must judge almost entirely by the sense of touch as to what structures we are separating deep down in the pelvis.

I have never understood why some celiotomists persist in asserting that there is such great danger of wounding the bowel in operating from below. Within the last four years I have operated for pelvic diseases *per vaginam* in from four-fifths to nine-tenths of my cases, and I have never opened a bowel or torn a ureter; and while I have had but little trouble in my

suprapubic operations, I have been compelled upon several occasions to suture the bowel.

While myomectomy must be encouraged wherever the operation can be successfully performed, we can never know that this can be done until we have examined the tumor by the sense of touch. This can be done in small myomata through the vaginal incision as accurately as through the abdominal incision, and then, if the tumors cannot be enucleated and the uterus saved, they may be removed more successfully per vaginam by morcellation; or, if too great difficulty is encountered in morcellation, the vagina having been separated, the bladder dissected from the uterus, the uterine arteries controlled, the operation can be then completed quickly by opening the abdomen. In myomata too large for morcellation I complete the operation more rapidly, and my results are much better, by the combined vagino-abdominal method.

Where drainage is indicated it is more successful per vaginam, and no one can appreciate the superiority of this method over abdominal drainage until he has had extensive experience in vaginal work.

In my earlier celiotomies I irrigated and drained in many cases; in similar cases I now seldom do either and my patients convalesce more satisfactorily. It is nearly impossible to drain for any considerable time through the abdomen by either gauze, or glass or gum tubes, without causing extensive adhesions, and often persistent sinuses leading down to an infected ligature.

I am positive that sinuses are not more frequent following vaginal work. Judging from my own operations and from the numerous cases of sinuses I have seen in the practice of other abdominal surgeons, I am forced to the conclusion that there are relatively ten cases of sinuses following the suprapubic method where there is one following the vaginal method. If vaginal work is correctly performed and sutures are not used, there is seldom any case in which there is an excuse for a permanent sinus. I had a few sinuses in my earlier vaginal work, but my results are different now.

Vaginal incision and drainage as a preventive against further extension in uterine infection following labor or abortion was first suggested by Dr. Henrotin and myself at the meeting of the American Gynecological Society at Baltimore in 1895, at which time papers were read by us and by Dr. Charles Jacobs, of Brussels, discussing all kinds of surgery of the uterus

and adnexa per vaginam. What was then theory is now demonstrated by facts, and we know that incision and drainage at the beginning of such infection, before the structures outside the uterus are extensively involved, does often prevent pelvic suppuration, or systemic infection by the absorption of toxins or the germs of suppuration. To be successful the incision must not be delayed.

The only argument in favor of suprapubic hysterectomy for the removal of a malignant uterus is that infected tissues outside of the uterus may then be removed and the operation made more thorough by ligating the arteries at the internal iliac or ligating the iliacs in continuity, and dissecting out infected pelvic glands. This operation cannot be performed except by an experienced surgeon, and may then require nearly two hours for its performance. A little experience will show that this method is not justifiable, for the disease will return so soon that the patient would probably have lived as long, or longer, had the uterus not been removed. Time will prove that no cancerous uterus should be removed where the disease has involved tissues outside the uterus, and in nearly all these cases the operation per vaginam is preferable and the immediate and subsequent mortality not so great. The immediate mortality should be practically *nil*, and recurrence may be less frequent if we will curette the uterus and use the galvanocautery a week before the hysterectomy and again at the time of the hysterectomy.

As it may be that the ovaries serve a purpose similar to the ductless glands, it might be well not to remove them in any operation per vaginam where they are not so diseased as to endanger the health or the life of the woman.

In conclusion, a few words as to the simplicity of technique in operations per vaginam: Where we do not perform hysterectomy the operation may be more successfully and more rapidly performed by using no speculum or retractor save the fingers; and in hysterectomy retractors are seldom indicated, and I have removed large myomata by morcellation without using any. It might, however, be correct in morcellation to use a broad retractor in front to better protect the bladder and ureters.

I have been especially impressed with the simplicity and rapidity of the operation for lacerated cervix by using no retractors or specula and uniting the raw surfaces with a continuous catgut suture. The operation by this means may be completed

in bilateral laceration within ten minutes and the result will be nearly perfect in every case. I believe these patients would not suffer serious injury, and that most of the operations would be successful, were they allowed to get out of bed on the second day.

PATENCY OF THE STUMP AFTER SALPINGECTOMY.¹

BY

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THE history of abdominal surgery is far from complete. It has been practised during the past fifteen years to an enormous extent, and unfortunately a large number of the would-be abdominal surgeons have not had more than the rudiments of training for such work, if indeed as much. Many untrained operators, whose greatest achievements in surgery have been incising abscesses or amputating fingers, have unflinchingly invaded the abdominal cavity in search of a rapid road to fame. They might possibly shrink from an arm amputation, but never from an abdominal section. The subsequent history would be very interesting. However, unfortunate sequelæ of abdominal and pelvic surgery do not come to ignorant workers alone, the very best operators having many post-operation patients to haunt their offices and hospital clinics. These cases furnish us with some of the dark and unpleasant history of this regional surgery. Some writers of wide reputation are aroused to this feature of the work, and some are questioning whether abdominal work is really of value to the human family. A brilliant operation and a permanent cure are oftentimes far from synonymous. Schauta¹⁹ stated that of a series of 246 cases of ablation of one or both appendages, with 18 deaths, he had been able to trace 189, of which 172 were double and 17 one-sided. Of the double ablations 95 were immediately cured, 8 more remotely cured, and 69 complained of further symptoms. Of the single ones 4 were completely cured and 13 continued to complain. Thus but 107 out of 189 cases, excluding deaths, or 56.6 per cent, were cured. The causes of subsequent complaint in the 189 double ablations traced were: pain in 51, hemorrhage from the genitals in varying degree in 34, stump-exudates in

¹ Read before the American Gynecological Society, at its twenty-third annual meeting, held in Boston, May 24-26, 1898.

31, troublesome leucorrhea in 28, and in 13 cases fixed malposition of the uterus. Chrobak³ said 67 per cent of his cases were cured, while the remainder were not much benefited by the operation. Others give still more discouraging reports. While not sharing these unfavorable opinions, we have seen some cases that required surgical relief subsequent to double as well as single salpingo-oöphorectomy.

A study of the many different elements that go to make up this percentage of uncured cases would be of great interest, but our remarks are to be limited to but one of them, one that to us seems to be a very important factor. We allude to the failure to close the canal of the Fallopian tube stump, or its subsequent restoration after salpingectomy. We have been interested in the study of the subject since 1892, during which year we were confronted by a paradoxical case that at the time we believed an impossibility. It was a question of a young woman with an abdominal enlargement, brought to our office for diagnosis. She stated that more than a year before a prominent surgeon had removed both her ovaries and Fallopian tubes, and her physician, a very intelligent man, who accompanied her, told us he had seen them removed and had examined them immediately afterward. There could be no question as to the existence of advanced pregnancy, as the fetal movements and heart sounds were plainly recognized. We lost all trace of the case and do not know the result. As the menstrual flow had gradually returned, so that five months after operation it was practically the same as in years gone by, we could readily understand the ease with which a small piece of her ovarian structure could be left *in situ*, as in the noted cases of Schatz,¹⁵ Robertson,¹⁷ and our esteemed Fellow, Engelmann.⁴ But as both Fallopian tubes had probably been ligated and pregnancy had ensued, a problem more difficult of solution was presented. Believing the physician and patient were mistaken concerning the removal of both tubes and ovaries, our impressions from the case were not very lasting. This is regretted, as between that time and the date of the first observation noted below we failed to carefully examine a number of specimens of old salpingectomy stumps at our disposal. Since 1895 we have found, in five specimens of uteri removed months after ablation of one or both appendages, that the canal of the tube stump was still pervious. In brief, they were as follows:

CASE I.—Mrs. B., colored, 26 years old and five months

married, was admitted to our service in Columbia Hospital November 8, 1895, complaining of severe pain in lower part of the abdomen, vaginal discharge, and great weakness. Had been ill about two weeks, and her doctor told her that she had aborted eleven days ago, the cause of which could not be ascertained. As she had experienced nothing indicative of pregnancy, she doubted the correctness of this opinion. Her menses began at 11 years of age, occurred in recent years every three or four weeks, lasted usually six days, and were profuse though free from pain. A mass was found filling pelvis and extending nearly to umbilicus on the right side; and as for the next few days the temperature ranged from 101° to 105° and the pulse was very rapid and feeble, an abdominal section was made November 11, 1895. The intestine, the large fibroid uterus, and the appendages were found matted. Each Fallopian tube contained about an ounce of pus, and both were removed with the adherent cystic ovaries. The feeble condition of the patient prevented hysterectomy at the same time. The Fallopian tubes were considerably infiltrated at the cornua of the uterus, where they were tied off on each side with silk applied in two interlocking loops, one including part of the ovarian ligature close to the uterus and passing over the broad and infundibulopelvic ligaments, and the other including the structures in the broad ligaments above the inner end of the first.

They were tied very tightly and cut into the top of the pedicle somewhat, though, it was thought, not to the extent of entering the Fallopian tube canal. July 27, 1896, for constant hemorrhage, pain, and increase in size of the uterus, vaginal hysterectomy was done. Found left tube stump free from adhesions and its canal readily permitted a fine probe to pass through it to the uterine cavity. The right stump was embedded in a mass of adhesions, but the pedicle ligatures were not found.

CASE II.—Mrs. S., widow, white, 44 years old, three children, the youngest 16 years old, and two abortions, was sent to our service in Providence Hospital by Dr. Pyles, of Anacostia, D. C., February 5, 1896. Menses regular to July, 1895; then lasted three weeks and an attack of peritonitis with diarrhea ensued; since then has not menstruated and has been an invalid; has swelling of "privates," abdomen, and legs. An examination revealed pelvis and lower part of abdomen occupied by large dense mass, in which could not be distinguished the appendages and uterus. The vulva and legs were edem-

atous. The patient was very feeble, but three weeks later abdominal section was done and a right pyosalpinx was removed in pieces and a left tubo-ovarian abscess intact. The adhesions were very dense, and an opening about four inches long in the rectum was accidentally made. The right tubal stump with the top of the broad ligament was sutured with a continuous suture of silk from infundibulo-pelvic ligament to the uterine cornu, care being exercised at each end to securely ligate the artery. The left stump was ligated as in Case 1. The rectal opening was closed by continuous suture of fine silk; gauze drainage two days. March 1. fecal fistula established, for which various unsuccessful procedures were prosecuted, and September 3, 1896, vaginal hysterectomy was done and the fistula closed. In the specimen removed both tube stumps permitted the passage of a stiff silkworm-gut suture. No notes were made in this case as to enlargement of Fallopian tubes at cornual junction, but it is thought such was the condition and that in at least the left the ligature cut into it.

CASE III.—September 21, 1895, removed from Mrs. R., white, 32 years old, double pus tubes and cystic ovaries. This work was indicated by dysuria, metrorrhagia, and constant pelvic pain since fever immediately following the birth of a child, her only pregnancy, fourteen years ago, together with a pelvis well filled with a mass. For ligation of stumps the interlocked silk ligatures were applied as in Case 1, and did not cut into tissue on either side. During summer of 1896 began having pain, much increased at menstrual period and accompanied by profuse flow. These symptoms became so exaggerated that in December, 1896, her physician again referred her to us. The uterus was found to be nearly five inches deep, much enlarged, and nodulated with fibromata. Her complaint was so overwhelming that we advised vaginal hysterectomy, which was done January 7, 1897, at Providence Hospital. Both tube stumps were found to be permeable and no pedicle ligatures discovered.

CASE IV.—Mrs. J., white, 27 years old, widow, two children and no abortions, was operated upon at Columbia Hospital in July, 1896, for double hydrosalpinx, a right ovarian cyst four inches in diameter, and a right cystic ovary, removing all close to uterus by abdominal section. Two years before we had done for her curettage and trachelorrhaphy. The pedicles were not large, and, as in Case 1, were ligated with silk, which did not apparently deeply indent them. Four weeks later left hospital

and returned to her life of prostitution. In January, 1897, she was feeling so bad that relief was again sought. The uterus was found to be partially fixed and a very tender mass at either cornu of it. February 15, 1897, did vaginal hysterectomy and found the cornual masses to be small abscesses surrounded by inflammatory tissue. Each abscess connected with the uterine cavity by a small canal that was thought to be a Fallopian tube. The naked-eye appearance of the uterine cavity was that of active inflammation. Both pedicle ligatures of double oöphoro-salpingectomy were found in the abscesses.

CASE V.—Mrs. H., 38 years old, came into our care in January, 1897, for treatment of large, painful mass occupying pelvis and lower part of abdomen, with obstinate constipation. In 1891 she had an abdominal operation for removal of an appendage; had menstruated regularly and profusely since until last October; had never been pregnant. In March, 1897, laparotomy, removing a left pyosalpinx and ovarian cyst and a fibroid uterus from dense adhesions, in liberation of which a large rent was made in descending colon and sutured. The right appendage was absent, except a tube stump fully an inch in length, the canal of which was decidedly permeable throughout its entire length. No pedicle ligature was found.

E. Ries, of Chicago,¹⁶ reported three cases examined microscopically, which are briefly as follows:

CASE I.—Left pus tube and ovary removed; sinus remained. Seven months later had an ovarian abscess and hydrosalpinx on other side. Uterus adherent all over, forming part of wall of sinus. He removed the uterus and sinus by laparotomy September 28, 1896. Sinus terminated in abscess containing five silk ligatures. Left stump excised and examined microscopically in a series of sections embracing entire stump up to interstitial portion of tube. The cavity is open throughout. The epithelium is the usual low columnar epithelium of this portion of the tubes, and stops at the surface of the stump without investing the cut surface of the stump. No threads to be found in the stump.

CASE II.—Both tubes and right ovary removed several years ago; now chronic pelvic peritonitis and adherent retroflexion. Vaginal hysterectomy by Dr. W. H. Rumpf, December 8, 1896. Both tubal stumps examined in series. They are perfectly permeable, though the cavity is very narrow. Epithelium well preserved up to abdominal opening of stump. No threads found in the stump.

CASE III.—Several years ago removed both tubes and ovaries. Since then development of fibroids in the uterus. Vaginal hysterectomy by Dr. F. Henrotin in 1897. Both tubal stumps are cut in series of sections and contain an open cavity clear up to abdominal opening of stump, the epithelium being well preserved. No threads to be found in the stump.

Besides these cases of Ries and ours there are still further striking ones in which pregnancy began and was completed after the removal of both appendages. So far as we know, but three positive cases, those of Sutton,²¹ Gordon,⁸ and Ill,¹¹ have been published. Sutton removed both appendages for double ovarian cyst, applying silk ligatures to stump close to uterine cornua and tying the Staffordshire knot. One stump was severed with the thermocautery and the other with scissors. Woman previously sterile, but gave birth to two children after operation. Gordon removed both appendages for menorrhagia and dysmenorrhea, both ovaries being large and flabby. He ligated the pedicles with No. 6 catgut doubly wrapped. Two years later gave birth to a child. In Ill's case bilateral multilocular ovarian tumors were removed, leaving small piece of ovarian tissue in right stump. Silk ligatures were applied close to uterine cornua by transfixion of pedicle, interlocking and tying both ways. The woman gave birth to a child about one year later, and, I am informed by Dr. Ill, is now nearly eight months pregnant. These cases of pregnancy following so late after ablation of the uterine appendages prove that not only was functioning ovarian structure left behind, but that communication between it and the uterine cavity either continued or was acquired after operation. Without other evidence we must believe this communication is practically always through the stump of the Fallopian tube. For many of the stump exudates following double salpingotomy, of which Schauta reported 31 in 189 operations, it is probable this communication between the stump and the uterine cavity is responsible. Probably many of the fixed and malposed uteri following this operation may be also traced to the same condition of the tube stump. In most cases of infected tubes and ovaries the uterine cavity is also infected, and the tube at the point of ligation is in the same condition. In such structures any form of ligatures can scarcely be expected to remain quiescent, but rather to readily become infected. It may be in this manner the constriction on the tube canal is removed, with ulti-

mate restoration of its permeability. Even were the tubal mucosa completely agglutinated for some considerable extent along the canal, we could not be sure it would not release itself and re-establish the canal. This occurs with serous membranes, of which striking instances are mentioned by Greig Smith,²⁰ who claims sero-serous approximation is a surgical error. We have very strong evidence of its occurrence in the Fallopian tube. Liell,¹³ Isaac,¹² Betrix.¹ Fraipont,⁵ and Goullioud¹⁰ report 72 cases of pregnancy following double pyosalpinx. Goodell has seen the same phenomenon. As a tubo-ovarian abscess, or a pyosalpinx whose fimbriæ are fastened to an ovary, may have uninterrupted communication with the uterine cavity, this sequel may be readily understood. It is reasonable to suppose, however, that in some of these cases a tube was closed by cohesive agglutination of its mucosa, which was later absorbed. In many cases of pyosalpinx the tube is enormously hypertrophied at the isthmus by inflammatory infiltration. Often a ligature drawn tightly down on it cuts through it completely. It may still constrict the vessels, and, if no attempt is made to re-ligate the tube stump, communication between peritoneum and uterine mucosa is re-established. This, however, does not appear to have occurred in any of the above cited cases. Again, *en masse* ligatures may slip off the Fallopian tube, even after the abdomen is closed. Or if catgut or other yielding material be applied on ordinary size stumps, and perhaps firmer material on larger ones as well, relief of pressure on the mucosa may be permitted, in the first instance by stretching of the ligature, and in the latter by shrinking of tissue grasped by it. It is probably due to the latter cause that we have the remarkable case of Fritsch⁶ in which both tubes were ligated in the middle with silk, and pregnancy followed three years later. And yet too much importance may be given to this point, as in 12 cases herein cited, including Fritsch's, silk was known to have been used in 7 and catgut in but 1 (Gordon's). Moreover, the cases of Gordon, Sutton, Ill. and Fritsch were non-inflammatory, and in all but one, in which silk was used, the mass ligature was employed. In this one case it was used on one side, and a continual fine silk for tube stump, top of broad ligament, and ovarian artery stump on the other. In one the Staffordshire knot was used on both sides, but in the other the ligation was by median transfixion and tying both halves separately. This was also the mode employed by

Gordon in the case in which he used No. 6 catgut. It is interesting to note that in but one case (author's fourth) were pedicle ligatures found.

We should not fail to remember Nature's tendency to restore injured structures to a normal condition. Even in the specimen examined by Gottschalk⁹ three years after removal of double pyosalpinx, the canal of the tube stump was permeable except at the point of former ligation. This point of "mere agglutination and loss of epithelium" would possibly have later opened as a result of movements of the parts and changes in the general nutrition of the patient. Fritsch seems very strongly imbued with the resources of Nature in reopening the Fallopian tube. He says that if the intestine of the dog is ligated, instead of death from ileus, the intestine beyond the ligature bulges out, lies close against itself, becomes adherent, as with Murphy's button, and canalizes itself again. He thinks something similar occurs in the Fallopian tube. In this connection we should not overlook the possibility of the presence of a second Fallopian tube on one or both sides. In this connection the case reported by Glasgow⁷ is very important. The left Fallopian tube was double in its proximal two-thirds, as demonstrated by microscopical examination. Péan¹⁴ reported a case of two well-formed Fallopian tubes on the right side, and Wetherell²² found them on both sides. Gustave Richard¹⁵ found in the bodies of twenty women, selected at random, supernumerary pavilions and canals joining the canal of the Fallopian tube at various distances from the fimbriated end. Johnstone, Rokitansky, Hennig, and others have met with them. This condition may have been present in Fritsch's case, inasmuch as the ligatures were placed on the middle of the tube and not at the cornua of the uterus. Of this more may be heard anon, since Beuttner's² operation of ligating the tubes near the fimbriæ to produce sterility is being practised abroad, and we believe pregnancy may follow it.

The consequences of permeability of the canals of these stumps are pregnancy and peritoneal or stump infection. Of the former we have found but four reported, though probably others have occurred. Owing to the incomplete operation records kept by many surgeons, they cannot substantiate them if confronted by the surprised woman. To many women pregnancy following removal of diseased adnexa is the fondest imagination, but to others pregnancy means imminent danger and is a condition to be absolutely avoided. If ligation or

removal of the Fallopian tubes as now practised generally is not successful, then some better method must be devised. By far the most serious danger is that of infection spreading from the uterus to the peritoneum by this avenue, as occurred in our Case 4. While the uterus remains after removal of the appendages, it is nearly as liable to become infected as before operation, and if this short, straight canal remains after salpingectomy the peritoneum is brought into even closer relationship with the infected uterine mucosa than before operation.

There is practically no barrier between the peritoneum and a gonorrheal or other death-dealing germ. Without attempting to announce a panacea, devise a new operation, or to claim any credit for originality in any form, the author wishes to suggest a method of dealing with salpingectomy stumps that will effectually occlude them. If it is successful, then many of the unfortunate sequelæ of surgery of the uterine appendages will be eradicated from our case records. It consists simply of cutting out the Fallopian tube, with a wedge-shaped piece of the uterus deep into the uterine wall, by two perpendicular incisions about an inch long in front and behind the tubo-uterine junction, and closing muscle and peritoneum by suture. By this method nearly the whole of the tube is removed from the uterus, and if the muscle is well approximated with the peritoneum over it and well sutured, we may be certain of occlusion of the opening in the uterine cornu. In doing this it is necessary to avoid passing sutures into the mucosa and to exercise caution in tying the uterine artery in this region. The author has followed this method for years for certain cases, and almost exclusively during the past two years. In cases in which infection of the uterine mucosa is also present it is advisable to curette before opening the abdomen, taking especial care to thoroughly curette the angles of the uterine cavity.

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PREGNANCY FOLLOWING VENTROFIXATION, WITH IMPROVEMENTS IN THE TECHNIQUE OF THE OPERATION.¹

BY

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THE mere fact that the operation has stood the test of more than fifteen years is sufficient proof that the results following it have been on the whole satisfactory. During these years it has been performed many thousand times by several hundred operators, many of whom have published their experience. As far as the writer can learn, the opinion of the majority of them coincides with his own, namely, that the attaching of the uterus to the abdominal wall is the best and only method of curing retroversion of the uterus when that organ is bound down by adhesions.

Although many of these patients may be kept comfortable by almost continual office treatment, such as placing them in

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the genupectoral position and painting the vaginal vault with Churchill's iodine, and the application of boroglyceride tampons near to Douglas' cul-de-sac, which is occupied by the fundus and appendages, still the circulation is obstructed and the majority of them never regain their health until the uterus and ovaries and tubes are lifted out of their abnormal position and by some means fixed in their proper places. Pessaries, of course, are out of the question when there is pelvic peritonitis and disease of the ovaries and tubes, as is always the case when the retroverted organs are glued to the pelvic peritoneum. In this connection it might be well to point out the necessity for making sure that the uterus is not adherent, although it may be movable. Many of the cases who come to us saying that they cannot endure a pessary have the uterus and appendages attached to the peritoneum of Douglas' cul-de-sac; and although their physician may have thought that he had replaced the uterus in anteversion, before introducing a pessary, he was mistaken—it may have been brought forward, but the rectum has come with it, and as soon as he has removed his finger or the sound the uterus has been drawn back again by the adhesions. A pessary in such cases cannot fail to cause pain and discomfort, for it is probably pressing upon the inflamed tubes and ovaries, which, being fixed, cannot slip out of its way.

One of the great advantages which ventrofixation possesses over Alexander's operation is that, if the uterus is retroverted and attached to the pelvic peritoneum, Alexander's operation is sure to fail; and, in fact, in attempting to perform it many operators report that one or both of the round ligaments have been pulled out of the uterus, as has happened to the writer in three cases. But even if the ligament does not break and the operator succeeds in shortening it, the steady pull of the adhesion backward will prove stronger than the round muscles can pull forward. If the round muscles do not relax or tear out of their anchorage when the uterus or appendages are fixed, they will at least be subject to a constant and eventually painful strain. If, on the contrary, ventrofixation is performed the abdomen is opened, and if there are any adhesions they are easily detected and broken up. Several times the writer has found the uterus apparently movable, and yet, having some slight doubt about it, the abdomen was opened and then the back of the fundus was found densely adherent and required a great deal of effort to detach it.

One of the accidents following ventrofixation comes precisely from the raw surface left at the back of the uterus after detaching it. In some cases the writer has turned the uterus forward so much that the raw surface on the back of the fundus has been utilized to form an adhesion to the abdominal wall, although this should never be done except in cases where the ovaries have been removed, for reasons which will appear later. So much of the raw surface of the back of the uterus as is not covered by the attaching of the latter to the abdominal wall may sometimes be covered by bringing down the omentum well behind the uterus, so that it, and not the intestines, may form adhesions to it. Although by no means radical in his tendencies, the writer agrees, in these cases at least, with those who would remove the uterus when both of the ovaries and tubes have to be removed and the uterus itself is large and heavy and diseased. This opinion is based upon a case of this kind at present under his care, in which a woman who had been a life-long sufferer from a retroverted and fixed uterus had laparotomy performed two years ago, when both tubes and ovaries were removed, and the uterus, densely adherent by the whole of its posterior surface, was detached and fastened forward by ventrofixation. Although the operation succeeded admirably in keeping the uterus forward, she remained a sufferer until a second celiotomy was performed a month ago, when the bowel was found to be firmly adherent to the back of the uterus. This would have been avoided if the uterus had been removed. Another patient with a large, heavy, and very diseased uterus, from whom large pus tubes were removed, complained for several years after the ventrofixation, owing to the dragging of the heavy organ on the abdominal cicatrix. In her case also it might have been better to have removed the uterus. A note of warning should be sounded against the danger of perforating a retroverted and fixed uterus. This happened a few years ago to a colleague who does not believe in gynecologists, who introduced a sound and thought that he had replaced the uterus because he made the sound point forward; but the patient speedily contracted septic peritonitis and died, because, as was discovered at the postmortem, she had old diseased tubes which had at one time been inflamed and caused adhesions, and when the sound went forward it was not because the uterus had been lifted up, but because the sound had gone through the uterine wall. The sound should be discarded. Among many practitioners, retroversion, even when diagnosed,

is not considered of sufficient importance to advise the patient to have anything done. It could be easily shown that this is a great mistake, on account of the reflex nervous symptoms; but, apart from that, the writer has long suspected that the pressure of the fundus on the rectum sometimes leads to ulceration and cicatricial contraction of the intestine. While writing this a patient who had been suffering from tenesmus due to retroversion for some years was gradually affected with obstruction of the bowel, and on being opened by one of my colleagues a stricture of the rectum was found exactly at the spot on which the fundus of the uterus was resting. This case illustrates the importance of curing retrodisplacements before too much damage has been done.

Technique.—There seems to be a pretty general consensus of opinion that in ventrofixation the uterus should not be fixed, and that many ills will follow if this be done. It is claimed that the word “ventrofixation” should be abandoned, and that the operation should be, and should be called, “suspensio uteri”; that is to say, that the uterus should be fastened forward in such a manner that it will be allowed a good deal of movement. This can be done by attaching the ovarian ligaments to the abdominal incision, or, as preferred by others, the round ligaments near their origin are stitched into the wound. In the writer’s opinion the ideal operation when the uterus is movable is Alexander’s operation; and the ideal operation when the uterus is fixed would still be shortening of the round ligaments, after a preliminary freeing of adhesions either by a vaginal opening into the pelvis or by an abdominal one. Whether in the latter case the round ligaments should be shortened by doubling them in the broad ligament, or whether, after breaking all adhesions, the ordinary Alexander’s operation through two inguinal incisions should be performed, is a matter of individual taste. The latter would have the slight objection of necessitating three incisions through the skin, and would have the advantage of not leaving any stitches or adhesions in the peritoneal cavity. The writer has had an opportunity of examining about 75 of his own 111 cases from one to three years after the operation, and in most of them the uterus was still adherent to the abdominal wall, just as it was on the day on which it was first attached there. In a few of them the uterus was still anteverted, but had a good deal of mobility. These cases could all be classed as successful, because the uterus remained up and the symptoms of retroversion were all cured. In one exceptional

case the operation was a failure because the uterus was stitcned to the abdominal wall by three of the same sutures which closed the abdominal wound. They were not buried, but at the end of four weeks were removed while the adhesive material was still soft and stretchable; and when the abdomen was opened a year later for some other condition, the uterus had again fallen back, and there was a fibrous cord extending from it to the abdominal wall. The writer's present technique consists in scarifying both uterine and abdominal peritoneum and stitching the top of the anterior surface of the fundus to the abdominal peritoneum, and not including anything else, with two silk stitches. To guard against this parietal peritoneum being peeled off by the weight of the uterus, it is supported for a month by passing through it the silkworm-gut sutures which close the abdomen.

A point which has been discussed a good deal, but which may now be considered as settled, is this: while some have advocated ventrofixation for every case of retroversion, whether adherent or free, because they have found it easier to perform than to find the round ligaments, it is now generally admitted that it is not justifiable to perform it in every case. First, it should not be done unless we are certain that the uterus and appendages are bound down by adhesions, or, in other words, we must never do a ventrofixation if it is possible to do an Alexander; but we must make sure that the uterus is really and not apparently fixed, as is the case when the fundus becomes locked under the promontory of the sacrum, in which case it is necessary to unlock it by drawing it down, when it can be easily lifted to its proper place behind the symphysis pubis. But we might also say that any case which can be put up and kept up by the aid of the pessary should never be submitted to abdominal section, for in these cases Alexander's operation is a much safer and more suitable one in every way. Why? Because Alexander's operation has never even been accused of having caused complications if pregnancy ensues, while, as would appear from the replies which have been received from forty-one well-known physicians, probably ten per cent of the ventrofixation cases suffer some pain from the adhesions, even if they do not become pregnant, while if the latter eventuality occurs about six per cent of them have miscarriages or complicated labors.

Another point to consider is, what ligature shall we use—silkworm gut, silk, or catgut? The majority of operators use

buried silkworm gut, and this has been used by me in more than half of my cases. Of these sutures between five and ten per cent have given trouble, a few of them having required the removal of either one or both buried sutures after many months' suppuration. In the other half Chinese silk was used, well boiled and dried and then soaked in a saturated solution of iodoform in ether. In only one out of fifty or sixty cases in which this was used was there any trouble, and I am now using this suture only for this purpose. It must be admitted that catgut chromicized so as to last three months would be preferable. What becomes of the buried silkworm-gut stitches? A few months ago the writer assisted at a second celiotomy on a woman who had had one ovary and tube removed four years ago, and who was suffering so much with the other ovary that she demanded a second operation, in doing which we came upon the buried silkworm-gut stitches just as they were placed to close the incision four years ago, neither eroded nor absorbed in the slightest degree. In cases where the uterus remains densely adherent the buried silkworm gut remains encysted indefinitely. Where the uterus drags away from the abdominal wall, only remaining attached to it by a ligamentous band of fibrous tissue, the silkworm gut will be found to have cut out of the uterine tissue and to remain in the abdominal wall.

A third point for consideration is, what part of the fundus should we attach to the abdominal wall? Considering that we must allow free movement of the uterus to rise as the bladder fills and to fall as it empties, and considering that we must keep in mind the possibility of pregnancy when one, or a part of one, ovary remains, it seems to me that it would be better to attach an area of half a square inch of the top of the fundus. To attach the whole anterior surface of the body of the uterus to the abdominal wall brings the cervix forward and fixes the whole of the organ, giving rise to a condition which might easily explain the troubles of the bladder and the accidents of pregnancy. For the same reason many of my correspondents advise us to use only one suture, taking care, however, to have corresponding raw surfaces on the uterus and on the abdominal peritoneum. Latterly several operators, including the writer, have been recommending the attachment of the uterus to the peritoneum only, but others again state that when they have done this they have met with failures to keep the uterus up. In view of the accidents of

pregnancy, which will be mentioned later, due to the immobility of a fixed point of the uterus, to which have been attributed many of the accidents which have occurred, I think more attention should be paid to the suggestion of one of my correspondents, Dr. A. F. Currier, of New York, who says: "I have about abandoned the operation of ventrofixation, as I find I can accomplish all that is to be desired for patients with retroflexion, whether complicated or uncomplicated, by shortening the round ligaments through a small median abdominal incision." Dr. Johnstone, of Cincinnati, also adopts a good method of suspending the retroverted uterus—namely, by including the round ligaments in the knot with which he ties the ovary and tubes. He says: "I never operate for a retroversion alone; the risk, to my mind, is too great to pay for the fancied relief. Where I find retroversion associated with diseased appendages, I transfix the broad ligament in front of the round ligaments, so that when the Staffordshire knot comes home at least an inch of slack is taken up in each round ligament."

Pregnancy following Ventrofixation.—In my own 111 cases pregnancy has taken place, as far as I know, in only 6, one or both ovaries and tubes having been left in in 4 of them, and both ovaries and tubes in the other 2. Of these 6 cases of pregnancy 3 had perfectly normal pregnancies and labors. Of the other 3, 1 had pain and elevation of temperature for two or three weeks before delivery, but had a perfectly normal confinement. Another, reported by Dr. Sylvester, had a normal confinement, but had a dead-born child. The third, reported to me by Dr. Reddy, miscarried at the seventh month. So that, judging from his own experience, the writer might feel perfectly satisfied with the operation and his method of performing it, in so far as subsequent pregnancies are concerned; but, believing that considerable experience must have accumulated since the collective investigation of Noble two years ago, one hundred circular letters were sent out on May 10, 1898, to prominent physicians in America, asking them if they knew of any cases of pregnancy following ventrofixation, and, if so, how many, and how many went on to normal confinement, and how many had met with accidents which might fairly be attributed to the ventrofixation. To these letters seventy-three replies were received, of which thirty-two stated that the writers did not know of any cases of pregnancy following ventrofixation, although they knew of many women who had been operated upon but did not afterward become

pregnant. This is what might be expected, as it is pretty well understood that ventrofixation is not the best operation for women who are liable to bear children.

Forty-one replied giving their experience, amounting in the aggregate to 148 cases. Although most interesting, want of space prevents me from giving all the replies in full, but here are a few extracts from them :

Dr. Mundé says : " Out of 12 ventral fixations done by me I heard of only 1 conception; abortion in fifth month, after several weeks of intermittent uterine contractions." Dr. Polk recalls but 2 cases, and both aborted. Dr. E. E. Montgomery knows of 4 cases: one was normal in every way; the second was a shoulder presentation, and the child was doubled up in the pelvis, necessitating morcellation; the anterior uterine wall was very much thickened; the third case had pain and distress, and threatened abortion at six months, but he does not think that this was due to the operation, as she was run over by a bicycle; the fourth case is still pregnant. Dr. Richard A. Norris knows of 5 cases: 2, in which the uterus was ventrofixated, were complicated; 2 other cases, in which the uterus was attached to the peritoneum only, had normal confinements but relapsed afterward; the fifth was also suspended to peritoneum only and held up well after normal confinement. Dr. Noble sends a most interesting reply, stating that he knows of 9 cases. No. 1 was included in Dr. Norris' report; No. 2 was a case of Porro operation because natural delivery was impossible, and mother died of sepsis; No. 3 was perfectly normal; No. 4 was also included in Dr. Norris' report and was the same woman as No. 1; No. 5 was delivered artificially by Dr. Mary McLane, of St. Louis, of twins—all doing well; No. 6, case of Dr. Parke, of Philadelphia, was septic at time of delivery, after a long and tedious labor, of a dead baby, and died herself; No. 7 was a forceps case of Dr. Vandenkirk, of Philadelphia, but both mother and child did well; No. 8, premature induced labor, version, and a dead child; No. 9, premature induced labor, forceps, dead child. Dr. Jewett says : " I have seen 3 cases of pregnancy following ventrosuspension. Labor was attended with no complications." Dr. Barton Cooke Hirst says: " I have attended 6 of my own operative cases in subsequent labor, all easy at term. I know of 2 in Philadelphia delivered with greatest difficulty on account of fixing womb too firmly. I do a suspension, not a fixation." Dr. Baldy knows of at least 6 of his cases going on to normal pregnancy and labor.

Dr. Grandin knows of 1 case of ventrofixation which had a normal pregnancy and an easy forceps delivery. He has done fixation or suspension about 50 times—5 of them without removing ovaries and 45 after removing both ovaries and tubes. His present preference is for suspension. He rejects fixation. Dr. Newman, of Chicago, says: "As I do no ventrofixation operations on women capable of bearing children, and as I do very little obstetrical work. I can only report 3 cases coming under my personal observation. The first was a normal pregnancy and normal delivery; the second had a pregnancy prolonged by two weeks and was delivered by version and forceps; the third has had a normal pregnancy and has not yet been delivered." Dr. Baer knows of only 1 case, which aborted early, but does not know whether it was the result of ventrofixation or not. Dr. Van de Warker knows of 4 personally, all normal. Dr. Dudley, of Chicago, knows of 3, out of 100 operations, all normal. Dr. Etheridge knows of 4, all normal. Dr. Reamy knows of 2: 1 miscarried at six months; 1 delivered with forceps at eight months because she suffered so much pain for two months attributed to fixation. Dr. Joseph Taber Johnson has operated a dozen times and knows personally of 1 pregnancy, which went on to a slow, painful, but successful confinement. Dr. Henry D. Fry knows of 3 cases, 1 done in the third month of pregnancy; all went on to normal confinement. Dr. R. S. Sutton says at least half a dozen of his cases have been confined after ventrofixation, all normal. Dr. C. B. Penrose says: "I can recall specifically 10 cases of pregnancy following ventrofixation, 1 a case of twins. As far as I know all the labors were normal, with one exception. In this case, attended by Dr. Hirst, forceps was applied. My own experience with the operation of ventrofixation, numbering now between 100 and 200 cases, seems to show that pregnancy is in no way harmfully affected." Dr. Hanks has done ventral suspension 50 times; 2 since have had normal pregnancies, and 1 miscarried owing to the fundus having become firmly attached to cicatrix. He does not do fixation. Dr. Florian Krug states that pregnancy followed in 14 of his cases of ventrofixation. In 1 case the patient aborted at three and a half months, but this was due to other causes. All the others went on to full time and had normal deliveries, and several of them have been delivered several times without any relapse of uterus. Dr. A. Palmer Dudley knows of 3 cases of pregnancy following ventrofixation done by himself. All had normal pregnancies and labors. Dr. Edebohls

has had 10 cases of pregnancy following ventrofixation: 8 had normal labors, 1 died of heart disease (nothing to do with operation), and 1 had a Porro operation, on account of difficult labor, and died. Dr. Jarman has had 2 patients who have had normal pregnancies and deliveries, and 1 is now pregnant, after ventrofixation. Dr. Watkins knows of 1 case of ventrofixation which was followed by pregnancy and which went on to normal delivery. The uterus fell back afterward, however. Dr. Malcolm McLean knows of 2 cases, both of which went on to normal labor. Dr. Vineberg has had only 1 case, but she has had two normal deliveries; threatened abortion at fourth month. Dr. J. Clifton Edgar knows of several cases, two of which he attended personally as consultant for difficult labor—shoulder presentations, due, he believes, to the ventrofixation, because they both had normal deliveries before. In both cases the uterus was buckled on itself. Dr. A. F. Currier reports one case which was sterile before and became pregnant after removal of the whole of one ovary and a portion of the other. The uterus was attached to the abdomen by a silver wire passing through each horn. The patient has been delivered twice since. Dr. Cragin reports three pregnancies, all normal. The deliveries were spontaneous in two, and in the third forceps had to be used; but this, he says, had nothing to do with the ventrofixation. Dr. Reddy, of Montreal, reports that a case of the writer's aborted at seven months, after having suffered a good deal of pain for two months previously. Dr. Evans, of Montreal, reports one case in which pregnancy and labor were normal. The band of adhesions from fundus to incision could be seen tightening at each pain. Involution was slow. Dr. Lockhart, of Montreal, knows of 3 cases, one a face presentation, but others normal. Dr. Hackett, of Montreal, reports the case of a young girl who had for some years been indulging in illicit intercourse without ever having become pregnant. She consulted a gynecologist, who, finding retroversion, advised ventrofixation, which was done. A month after the operation she returned to her lover and at once became pregnant, and Dr. Hackett has just confined her of a perfectly healthy living child after a perfectly normal pregnancy and labor. One correspondent, who forgot to sign his name, had 6, and another 3 cases, all normal pregnancies and confinements. A third, whose name was not given, knows of 2 cases in his personal experience; in one it was necessary to induce labor between the fourth and fifth months, because the uterus developed asym-

metrically and was impacted in the pelvis; in the second the child died at five months, and mother died of sepsis after artificial emptying of uterus. Dr. Reuben Peterson knows of only one case, and in this one there was normal delivery. But it was not a fixation, the uterus being suspended by passing a silk ligature around each ovarian ligament and through abdominal wall. Dr. J. Wesley Bovée knows of 3 cases after the Kelly operation of ventrosuspension which went on to normal delivery. Dr. McLaren, of St. Paul, sends me the history of 2 cases after ventrofixation. One suffered considerably from a dragging pain about the abdominal wound during the last few months of her pregnancy. She had normal labor, but there was partial relapse afterward, but no return of symptoms. Case 2 had ventrofixation for adherent retroverted uterus, two buried silk-worm-gut stitches being passed through the fascia of the internal oblique. Her labor was remarkably easy, requiring only an hour and a half.

The careful consideration of the evidence before us leads almost irresistibly to the following conclusions:

1. That as far as curing retrodisplacement, either retroflexion or retroversion or ante flexion with retroversion, is concerned, ventrofixation with two buried silk stitches through the peritoneum and fascia gives the most reliable results. Failures are unknown when the operation is performed in this way.

2. Ventrofixation should be reserved for cases in which abdominal section is necessary for other reasons, such as the detaching of adhesions and the removal of the diseased tubes which cause the adhesions. When it is expected that pregnancy may follow, some other operation should be chosen; because,

3. When the uterus is firmly attached to the abdominal wall and pregnancy follows, trouble of some kind, either pain, miscarriage, or difficult labor requiring obstetrical operations, takes place in about thirty per cent of the cases; that is, 36 in 148. According to my investigation, the other seventy-five per cent went on to normal labor, without other inconvenience than a dragging pain in about half of them.

4. When suspensio uteri was performed—that is, the uterus attached to the peritoneum of the abdominal wall—a few relapses occurred; but, to counterbalance this objection, the patients were free from pain during pregnancy, and the labors were less tedious, neither did they require resort to serious obstetrical operations. The uterus should therefore be suspended

rather than fixed to the abdominal wall in all cases in which any part of the ovary is allowed to remain.

5. A third method, it is claimed by some—namely, the intra-abdominal shortening of the round ligaments—is preferable to either ventrofixation or suspensio uteri. This may be done either by drawing a loop of the round ligament into the loop which ties off the ovary and tube, or, in cases in which the latter are not removed, simply to detach them from adhesions and shorten the round ligament by drawing up a loop of it and stitching it to itself for a space of about two inches. By this means the round ligament develops as pregnancy advances, and the dragging and pain and other more serious accidents which are present in thirty per cent of the cases of ventrofixation are certainly avoided.

6. If the uterus is attached to the abdominal wall the stitches should be kept on the anterior surface, but near the top of the fundus. The complications were more frequent when there was too much anteversion than when the anterior surface of the fundus was attached to the abdominal wall.

7. As large a surface as possible should be made to adhere, by scarifying both the anterior surface of the fundus and the corresponding surface of the abdominal peritoneum, in which case one buried silk suture will be sufficient to keep the uterus in good position.

8. Several of my correspondents mentioned incidentally that they knew of many cases of pregnancy after Alexander's operation, and that in no case was the pregnancy or labor unfavorably influenced by it. Alexander's operation should therefore be preferred whenever the uterus and appendages are free from adhesions.

9. The results of Alexander's operation are so good that even when there are adhesions it may be well to adopt the procedure of freeing the adhesions by a very small median incision and then shortening the round ligaments by Alexander's method, after which the abdomen should be closed. This can be done without adding more than one-half of one per cent to the mortality, which in Alexander's operation is *nil*.

ABSENCE OF UTERUS AND VAGINA. WITH SARCOMA OF ONE
OVARY AND ADENO-CARCINOMA OF THE OTHER.¹

BY

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(With five illustrations.)

I PRESENT the following report because of its unusually interesting clinical and pathological features.

Mrs. L. L., age 26 years, Austrian, came under my observation in January of this year and gave the following history: She had been married four years and had never menstruated. For the past six years she had had pain in the pelvis from time to time, but during the last six months these attacks had increased in severity and frequency. The woman was of average size with good general muscular development. The mammae were well developed, pelvis of normal size, and the pubes covered with hair. Family history was negative. An older sister is married and has several children; a younger sister, however, has a congenital defect of the pelvic organs, the uterus being of the infantile type and retroverted to the third degree.

An examination of the genital organs revealed the following: The vulva was very poorly developed, the labia being no larger than in a girl of 10 years, but the clitoris was of normal size. The introitus vaginae was represented by a vestibule about three-quarters of an inch in diameter and about a quarter of an inch in depth; this was covered over with a whitish, glistening membrane resembling cicatricial tissue (see Fig. 1). Introducing a finger into the vestibule and pressing it forward into the pelvis for a distance of several inches, it impinged against a solid mass. By recto-abdominal palpation the mass was found to fill the pelvis, the lower border extending downward to within a short distance of the perineum, while the upper border

¹ Read before the Obstetric Section of the New York Academy of Medicine, April 28, 1898, and the Metropolitan Medical Society, May 24, 1898.

could be felt above the pubes. It was fairly movable and of solid consistence.

A diagnosis of possible hematometra or hematosalpinx having been made, it was decided to make an attempt to create a new vagina, and, if possible, reach the tumor, incise it, and shell it out from below. Accordingly the patient was admitted to my service at the Polyclinic Hospital and was operated on January 14, 1898.

After a little blunt dissection through a transverse incision in the vestibule, the posterior wall of the bladder throughout



FIG. 1.—Showing absence of vaginal opening.

its entire extent was found to be closely adherent to the rectum. By careful dissection for a distance of about six inches between the bladder and rectal walls, an opening was made into the peritoneal cavity. Exploration of the pelvis through this opening discovered no attachment or pedicle from below, the tumor being apparently attached to the brim of the pelvis.

As the patient's condition did not justify prolonging the operation, removal of the tumor through an abdominal incision was postponed and the artificial vagina was packed with iodoform gauze, which packing was changed from time to time.

On January 27 abdominal section was done and the tumor removed. It was a solid globular mass, measuring about six inches in the longest diameter, attached by a broad and thin pedicle to the right iliac fossa and extending up close to the cecum, and only slightly to the free border of the broad ligament. On the left side a small, irregular mass was removed

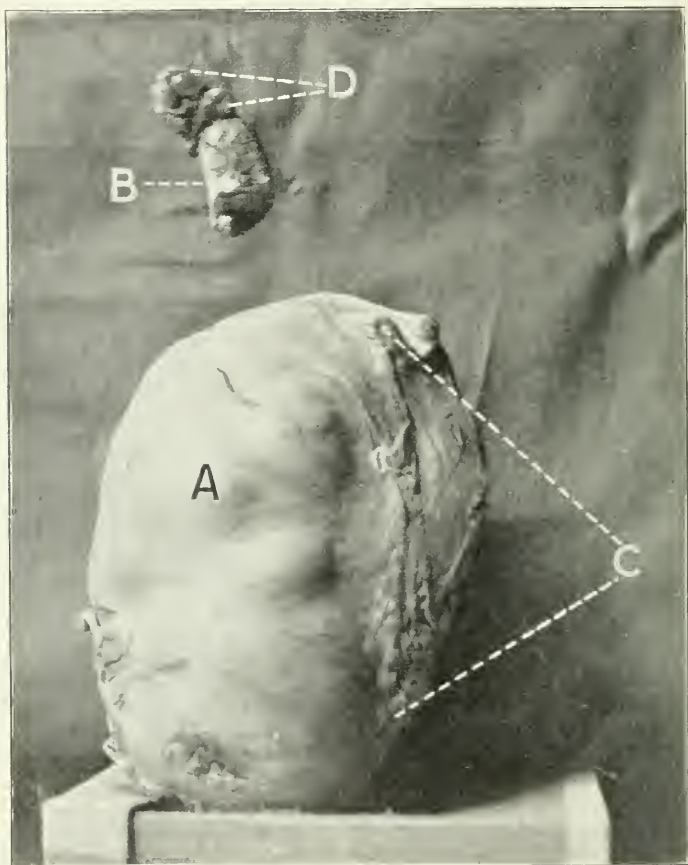


FIG. 2.—Tumors removed from sites of right and left ovaries. A. sarcoma of right ovary; B. adeno-carcinoma of left ovary; C. attachment of pedicle; D. parovarian cysts.

which was attached posteriorly to the upper border of the broad ligament at its point of reflexion from the pelvic wall (see Fig. 2).

On examining the pelvis after the removal of the tumor neither uterus nor tubes could be found, nor could any thickening or traces of a rudimentary uterus be discovered in the

broad ligament between the bladder and the rectum. The two layers of the broad ligament formed a thin band which stretched across the pelvis from side to side, and no origin of the round ligament could be made out (see Fig. 3).

The woman made a good recovery. As for the artificial vagina, the patient objected very strenuously to constant packing with gauze, and the treatment was not fully carried out. Nevertheless she has a vagina at present that extends up fully three inches. Curiously enough, the absence of the vagina did not appear to interfere with coition; the husband declared to me that he was not aware that there was any anomaly of the

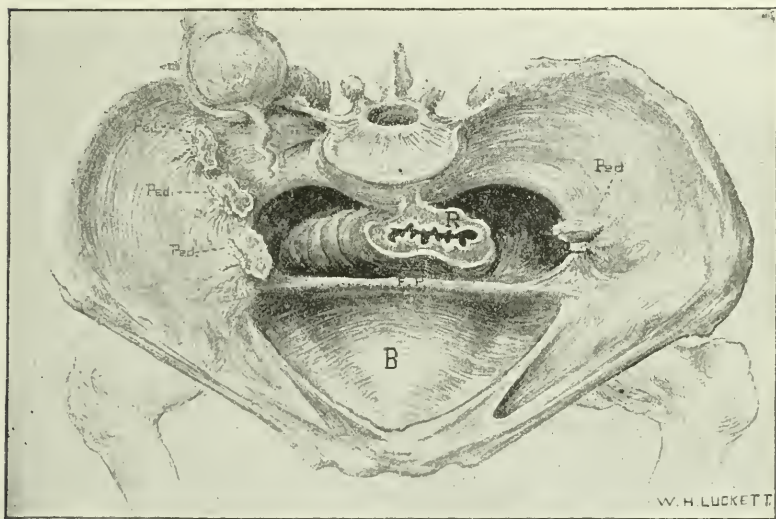


FIG. 3.—F P, peritoneal fold between bladder and rectum.

genital organs of his wife. The tumor and the mass removed from the left side were submitted to Dr. Vissman for examination, who has kindly furnished me with the following report:

“DEAR DOCTOR:—The masses removed from the pelvis of the woman 26 years old, and sent to the laboratory for examination, were as follows:

“The surface of the larger mass was lobulated, smooth, and glistening. Running across one end was a ridge two and one-half inches long by about one-half an inch high; the dimensions of the entire mass were six by four by three inches. The cut surface revealed a lobular condition; the color was reddish-gray, and it was found that a capsule could be removed without great difficulty.

"The ridge above spoken of proved to be part of a capsule, and from here the capsule gradually thinned out and in places was translucent. Microscopic examination of the ridge showed it to be made up chiefly of smooth muscle fibres. The examination of the masses inside of this sac showed that the stroma was composed of spindle-shaped cells, and that the alveoli, which were very irregular in shape, were filled with large, irregular round cells, with a slight bit of intercellular substance. This, according to Virchow's classification, would be a carcinoma; according to Billroth and other pathologists, it is spoken of as an alveolar sarcoma.

"The other mass was made up of a rather contorted tube

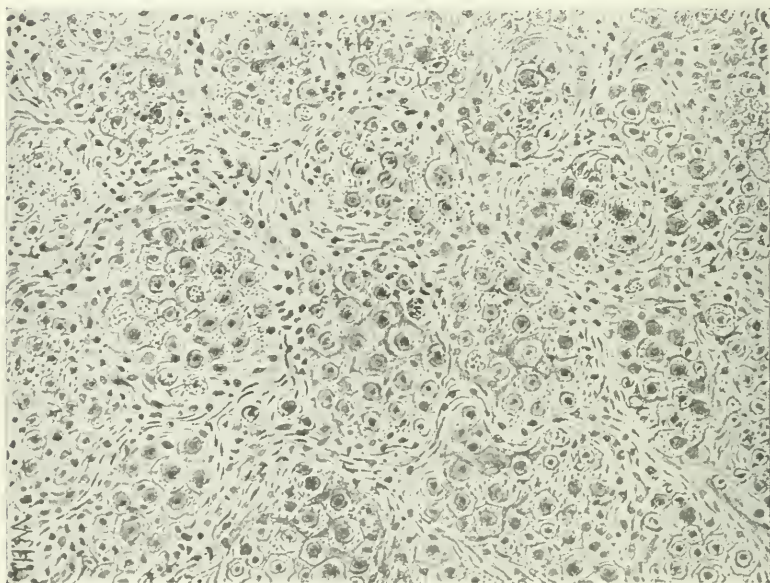


FIG. 4.—Section from tumor of right ovary, showing alveolar sarcoma.

whose lumen was variable in size. At one end in the under side it would admit the passage of a probe about the size of a knitting needle. Farther on it became sacculated, and in several places there were cysts, about the size of a pea, that contained a clear, straw-colored fluid. This tubule was connected with a bean-shaped mass one and one-fourth inches by three-fourths of an inch by one-half an inch. The outer surface of this mass was smooth, glistening, and grayish-white. Upon splitting it was also found that this had a very slight capsule, but that the inner portion was of a grayish-red color. Microscopic examination of this latter mass showed that it was also of an alveolar structure, the stroma abounding in fusiform cells. There

were some round cells found. The alveoli were round and appeared to be sections of primary tubules. A great many of them were round with a circular layer of more or less cuboidal cells, some of them containing circles of these cells embedded in masses of irregular epithelial cells. This, therefore, is tubular or adeno-carcinoma. This mass, I am inclined to think, originated in the ovary, on account of the primary tubules found.

"As to the origin of the larger mass above spoken of, I find nothing that would give positive proof.

"(Signed) WILLIAM VISSMAN, M.D."

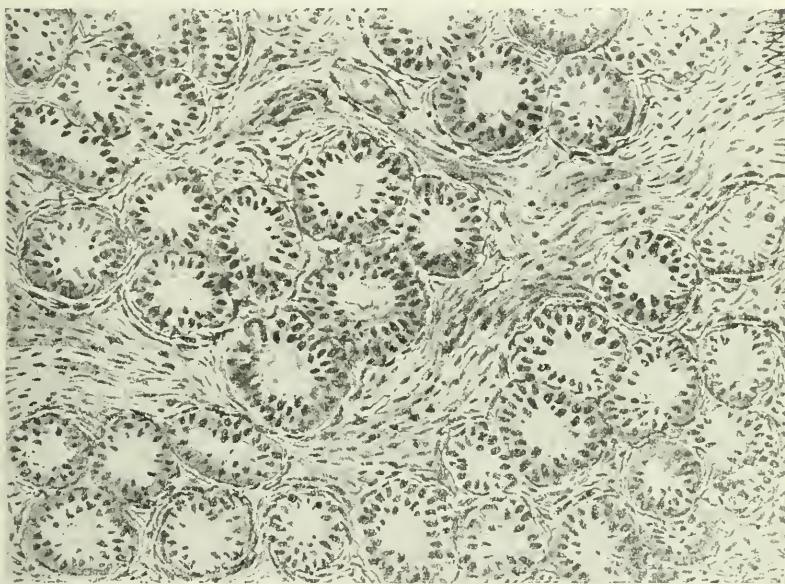


FIG. 5.—Section from tumor of left ovary, showing adeno-carcinoma.

Although the microscope does not give us positive proof as to the origin of the larger mass, there seems to be no doubt from its attachment and shape that the tissue of the undeveloped ovary was its source. In the second mass, however, in addition to the microscopical evidence of ovarian origin, the small cysts connected with the tumor, which are evidently parovarian, indicate its source.

Both sarcoma and carcinoma of the ovary are comparatively infrequent, and the development in the same individual of both sarcoma and carcinoma is exceedingly rare. It is, indeed, so unique that I feel justified in presenting the micro-

scopic pictures of the specimens, for the beautiful and accurate drawings of which, as well as for the excellent diagram of Fig. 3, I am indebted to my friend Dr. William H. Luckett.

I consider this to be a case of complete absence of the uterus and vagina, and not one of rudimentary uterus. In the operation for creating an artificial vagina I found the bladder and rectum very intimately adherent, and could discover no tissue or muscular fibres which would suggest a rudimentary vagina and uterus. An inspection of the pelvis through the abdominal wound revealed a complete absence of these organs. Drs. W. R. Pryor and W. H. Luckett, who kindly assisted me at the operations, concurred fully in this opinion.

Kussmaul, in 1860, was the first to write an exhaustive treatise on anomalies of the pelvic organs and to explain these genital defects upon the basis of arrest of development in fetal life. Until then they were considered the results of accident or caprice.

The entire genital tract originates from Müller's ducts, the uterus and vagina being formed by the junction and fusion of the lower two-thirds, and the upper ununited section forming the tubes. The fusion of the lower two-thirds is nearly complete about the third month of fetal life. An arrest of development immediately before or after that period of fetal life will result in the various malformations of the uterus and vagina. An arrest of development at a still earlier period of fetal life must result in the absence of the uterus and vagina. The case reported is an example of this latter class.

A number of cases of absence of uterus and vagina have been reported. Burrage¹ made a very careful and complete collation of the statistics on the subject, and cited 360 cases of absence of uterus and vagina reported by 239 authors from the beginning to the present time, attributing 300 to the last century. Of these 360, 25 were made at autopsies. In the large majority of the remainder the diagnosis was made by palpation of the pelvic organs. In comparatively few cases, therefore, was the diagnosis corroborated at operation.

In looking over the literature on the subject, however, I can find no case recorded that corresponds to this one, where there are present both the rare conditions of complete absence of the uterus and vagina and malignant disease of the ovaries. The

¹ American Journal of Medical Sciences, 1897, vol. cxiii., p. 370.

nearest approach of a similar case is the one reported by Boyd,¹ where, together with absence of uterus and vagina, a small fibroid of the ovary was found.

The interesting and unusual features of this case are, first, complete absence of vagina, uterus, and tubes; second, the existence of malignant disease of the ovaries together with this anomaly; third, the presence of sarcoma and carcinoma of the ovary in the same individual; and, furthermore, the sarcomatous and carcinomatous degeneration of the undeveloped ovaries, which tends to confirm the theory of the origin and growth of these tumors from embryonic tissue.

243 EAST BROADWAY.

CRIMINAL ABORTION.²

BY

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TAYLOR in his "Medical Jurisprudence" says: "Abortion is commonly understood to mean the expulsion of the contents of the uterus before the sixth month of gestation. If the expulsion takes place between the sixth and ninth months the woman is said to have a premature labor; but the law makes no distinction of this kind, the term abortion being applied to the expulsion of the fetus at any period of pregnancy before the term of gestation is completed, and in this sense it is synonymous with the popular term miscarriage." The cause of miscarriage or abortion from this standpoint may be either natural or violent. The natural causes are sometimes very obscure, and the real cause may therefore be frequently overlooked. Abortions are so frequent that, according to Whitehead's observations, one pregnancy in every seven terminates in abortion, while according to Velpeau and Priestley the number is even greater, being one abortion in every three pregnancies. These gentlemen, with many others, claim that some women abort so easily and with so little disturbance that they may abort repeatedly

¹ Medical and Chirurgical Transactions of London, 1841, vol. xxiv., p. 157.

² Read before the Washington Obstetrical and Gynecological Society.

without even knowing that they had been pregnant; and, further, that there are so many adverse influences which enfeeble and depress the general health of both father and mother as to vitiate the conception from the beginning, and in such instances abortion becomes almost absolutely necessary. I shall not attempt to discuss the question as to whether abortions are more dangerous than normal delivery or not, further than to state that the most dangerous time for an abortion is during the third and fourth months, as the membranes and placenta at this period are much larger than the fetus and are more apt to be retained; and it is just at this time that criminal abortion is most likely to be attempted, as it is then that the woman becomes fully convinced of her pregnancy and is willing to do almost anything to be relieved of her burden. After the fetus is thrown off there is frequently a considerable period of rest, lasting in some instances for several days, before the revived contractions are strong enough to end the abortion; and not always then is the uterus, unaided, able to throw off its contents, the woman being all this time exposed to the danger of putrid absorption. A case of this kind occurred in my practice some years ago. The woman had aborted five weeks before I was called, and claimed to have been under the care of other physicians during all of that time, the last having treated her for intermittent fever. She told me frankly that she had aborted, that the doctor in attendance had been very careful to remove all the afterbirth, but that the bloody discharge, which was quite offensive, had continued all these weeks, being much worse when she walked about the house and especially when she went up and down stairs, and that now for the last week or more she was having "chills," sometimes several a day, and was losing strength very rapidly. On examination I found and removed a piece of putrid membrane about as large as a hen's egg, which promptly cured her intermittent fever.

The violent causes of abortion may be of an accidental or criminal nature, but it will not be possible in all cases for the practitioner to say positively whether it is a criminal case or not. In criminal cases the cause may be referred either to the use of mechanical means or to irritating substances acting either upon the uterus or bowels. It is hardly necessary to mention the medical substances that may be used for this purpose, as mechanical means are undoubtedly more effectual in

producing abortion and are therefore more frequently resorted to by the abortionist. It is not an uncommon thing to find certain instruments in the hands of some women who claim to be very knowing, and I have been told by such persons many times that it was never necessary for a woman to have a child unless she wanted it.

The law, according to the statutes of the District of Columbia, as compiled by W. S. Abert and Benjamin G. Lovejoy, says:

Chapter 16, Section 13.—“Any person who shall administer, or cause to be administered, to any woman in any condition of pregnancy, any medicine, drug, substance, or thing whatsoever, with the intention thereby to produce a miscarriage by any such woman, or to prevent her from giving birth to the child with which she may be pregnant, or shall use on any such woman any instruments or other means for said purpose, shall, in case of the death of said woman by any of said substances or means, or in case of the death of the child therefrom, be guilty of manslaughter, and be punished, on conviction thereof, by imprisonment at hard labor in the penitentiary of the District, or in any penitentiary used by said District, for a period of not less than four nor more than seven years, and be fined in a sum not exceeding one thousand dollars.

Section 14.—“Any person who shall aid or assist any one in producing, or cause to be produced, an abortion as aforesaid, or advise, direct, or counsel any one to produce, or cause to be produced, any such abortion, or permit or allow any abortion to be produced or caused as aforesaid, or in any manner countenance or approve thereof, in the event of the death of the woman pregnant, in consequence of any abortion as aforesaid, or in the event of the death of the child, shall, on conviction of any of the acts mentioned in this section, or referred to, be punished by penitentiary imprisonment as aforesaid for not less than three nor more than six years, and be fined not exceeding five hundred dollars.

Section 15.—“The preceding sections of this act shall not apply to any case of abortion produced or caused by regular physicians for the purpose of preserving the life of any woman pregnant, such induction of premature labor having been previously recommended by at least one physician in counsel; but it shall include and apply in all other cases of actual abortion or attempted abortion ending in the death of the pregnant woman or of the child with which she may be, or have been, pregnant, as mentioned in either of said sections.

Section 16.—“No druggist, pharmacist, dealer in medicine or medicines, or any other person shall sell or furnish to any person or persons any drug, medicine, or other substance known

or presumed to be emmenagogue, ecbolic, or abortificant, except upon the written prescription of some graduated physician who has been licensed to practise in the District of Columbia; and whoever shall unlawfully supply or procure any medicine, drug, substance, or thing whatever, knowing that the same is intended to be unlawfully used or employed with intent so to procure or assist in the miscarriage of any woman, whether she be or be not pregnant, shall be guilty of a misdemeanor, and shall, upon conviction, be punished by imprisonment in the District jail not less than three months nor more than one year, or by a fine not exceeding one thousand dollars, or by both such fine and imprisonment. . . .

Section 76.—"Every person who, within the District of Columbia or any of the Territories of the United States, or other place within the exclusive jurisdiction of the United States, sells, or lends, or gives away, or in any manner exhibits, or offers to sell, or to lend, or to give away, . . . any drug or medicine, or any article whatever, for the prevention of conception or for causing unlawful abortion, . . . shall be imprisoned at hard labor in the penitentiary for not less than six months nor more than five years for each offence, or fined not less than one hundred dollars nor more than two thousand dollars, with costs of court."

It will be seen that the question of quickening, or even the life of the child in utero, is not taken into account, as the law says "whether she be or be not pregnant," and it is immaterial as to whether the woman is willing or even solicits an operation. In general, when the criminal means taken to procure abortion are effectual in causing the expulsion of the child, it comes into the world dead, but it may be alive and die after its birth. Under such circumstances, although no violence is applied directly to the body of the child and its death is the result of the immature and feeble state in which it was born, the person causing such abortion might render himself liable to an indictment for murder.

In one of my cases, where a premature child was born alive to a bride of only a few weeks' standing, the bride's mother importuned me to smother the brat, hold its nose—do anything so that it would not live. On my next visit to this house I found the bride's mother covered up in bed and pretending, to her lady callers, to be very ill, and the bride dressed and lying on the bed, outside of the covering, taking care of her poor, sick mother. The child was gone, but whether it died a natural death or not I could not say.

In the large majority of instances the women do not die and

it is hardly possible for the crime to come to light. Every person involved in the affair, whether directly or indirectly, is for his own sake pledged to secrecy, and the medical man has no way of proving that the woman has been the subject of such treatment except by herself, and one can readily understand why she would be unwilling to inform on herself or why she would stoutly deny any statement her physician might make as coming from her; and then, too, I have always supposed that unless she should die her evidence would not be accepted, as she would be looked upon as an accomplice, but according to this same chapter 16 of the Statutes of the District of Columbia, section 20: "Every person offending against any of the provisions of this act shall be a competent witness against any other person so offending, and may be compelled to appear and give evidence before any magistrate or grand jury, or in any court, in the same manner as other persons, but the testimony so given shall not be used in any prosecution or proceeding, civil or criminal, against the person so testifying."

I have tried in several instances to get the women to make a written statement, but have never been able to convince any of them that it was a proper thing to do; but now that I know the law on the subject, I can promise that such written statement cannot in any way operate to their disadvantage, except as to notoriety.

If the woman should die, the fact that a crime had been committed may then come to light; but the victim is dead and the individual who is responsible for her death would hardly be expected to inform on himself, and without such written statement but little if anything could be done.

While comparatively few of the members of the medical profession are guilty of producing abortion on their patients, the most of us are at least guilty of standing by and allowing this crime to go unpunished, for it exists among all classes of society, those of the cultivated being equally as guilty as those looked upon as being depraved and abandoned, and I am satisfied that there is hardly a member of this Society who has not many times been called upon to finish up the work criminally commenced by another, and in perhaps the large majority of instances has allowed the friends and relatives of the women to think that he is the guilty party, or equally as guilty as the individual who has thrust his knife into the fetal heart. It is true, we as physicians are ready at all times to relieve human

suffering, and these individuals are frequently very decidedly sufferers and it would be cruel for us to refuse to give assistance. But should there not be some way in which we could protect our own reputations while helping others? As it now stands, we simply depend on the reputations we have made as good citizens. I am satisfied that in many instances where I have been called in to finish up such work, had the woman died I could not have satisfactorily explained to the public my connection with the case, unless they would have accepted my unsupported statement of facts. In one instance, for example, on my return from a meeting of this or some other society, I found a note on my slate asking me to call at a house about two squares from my office, and to please open the door and walk right in, as the sick person was all alone. I answered the call, rang the door bell and walked in as requested, and heard a feeble voice calling: "This way, doctor. Come upstairs." I went upstairs and found a woman, all alone, standing in the floor and trying with her own hands to remove an afterbirth. She was as bloody as a butcher and almost exsanguinated, and certainly would have died in a very little while from loss of blood had not assistance been given her. She was, by the way, a department clerk and a widow of several years' standing. On entering her house that night I distinctly heard heavy footsteps going out the back way, but no one answered to my call.

I have attended one woman in two abortions (claimed to have been the work of a practitioner of this city, but fortunately not of our school), in both of which she came near losing her life. The first time she promised, if God would let her live, she would be a better woman and more faithfully perform her duty to her church. The last time she was ashamed to send to me at first, but sent instead for one of her own faith, as she afterward told me, who, on learning what she claimed to be, refused to treat her, telling her that she had committed the unpardonable sin, and, as she had to go to the devil anyway, she might as well go now as at any other time. The doctor, however, was doing some surgery at the time and was afraid to treat this woman because of her septic condition.

About three years ago I was called to a fatal case where I had every reason to suppose a criminal abortion had been performed by a man whose name you would all recognize if I dared mention it, and who was still in charge of the case but could not be found. I refused to remain at the house unless

other physicians were called to my assistance, when three of the members of this Society were telephoned for, who will perhaps remember the case.

Two fatal cases have occurred in my practice during the past year. The first, the mother of five children, had several abortions, the cause of which I could not explain, but in December of last year I was sent for and found her suffering from septicemia, and soon learned that about a week previously she had aborted for the fifth time in the last four years, and, as she had given birth to a live-born child during the said four years, she had therefore aborted five times in a little over three years. On finding a slender piece of wire, about a foot long and quite rusty, in her room, I asked what it meant, when she admitted that she had used it on herself; that she had also used a long, slender instrument several times previously, but hurt herself so badly with it that she became frightened and threw it away. This time she used the wire and had again hurt herself quite badly. I considered her a very ill woman, and, fortunately, on the third day called in a consultant, who, finding her quite comfortable, gave a favorable prognosis, but within a few hours after our visit she had a slight convulsion and, as the family said, simply stopped breathing. I gave a certificate, in this case, of death from abortion followed by pelvic peritonitis, but made no further mention of the case, as the woman claimed to have committed the act herself and without her husband's knowledge.

The second fatal case occurred last August, and on my refusal to give a certificate of death a colored midwife was arrested and will likely be tried during the present term of court.

Statistics showing the frequency of criminal abortion have never been, and perhaps never will be, written, for the crime in its very nature is a secret one, the abortionist and his patient being equally guilty, and besides themselves no human ear hears what was agreed to and no human tongue can testify positively what was done. It is therefore not possible to make a correct record of such cases.

For some strange reason medical men, as well as the judiciary and the community at large, wink at advertisements well known as being those of professional abortionists, men and women who make infantile murder a business. It is only necessary to read some of our city papers, as well as others from all over the country, the various church papers not excepted, to

find that I have stated only absolute facts. It may be that the editors of such papers are ignorant of these facts, but it is hardly possible for them to be when such advertisements announce distinctly that no questions are asked and that one interview always accomplishes the desired result. Even if the editors and police are alike ignorant on this subject, the question might well be asked, What are medical men doing to put a stop to such work ?

719 MOUNT VERNON SQUARE.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Stated Meeting, Friday, November 5, 1897.

The President, T. C. SMITH, M.D., in the Chair.

DR. W. S. BOWEN reported a case of

CHRONIC TUBO-OVARIAN DISEASE AND APPENDICITIS, WITH SPECIMENS.

Mrs. H., widow, 30 years of age, two children, the youngest 6 years, has been under my care four years, suffering with chronic tubo-ovarian disease and menorrhagia. A very complete curettement of the uterus was done two years ago, with symptomatic cure of the menorrhagia, but pelvic pain has continued during the four years, with periods of exacerbation which at times suggested appendicitis. Six weeks ago the patient was operated upon by abdominal section, and the distal end of the vermiform appendix was found adherent to the fundus uteri, to the extent of one inch, by thick adhesions. The appendix was greatly elongated and congested at several points. The appendix was removed, and also a mass from each side of the uterus, consisting of ovary, Fallopian tubes, and inflammatory tissue all matted together. The abdominal wound was closed with silkworm gut, and the patient had a most satisfactory convalescence. She did not at any time after the operation have sufficient pain to require an anodyne, and is at present walking about feeling perfectly well. For twenty-four hours after the operation she suffered intensely from thirst. I should like to hear from the members whether they keep all food, even water, from their cases for the first few hours, or whether, on the other hand, it seems wise to alleviate this thirst. I believe the general concurrence of opinion at present is not to withhold

water from these cases for as many hours as was first thought necessary.

DR. H. L. E. JOHNSON said he had seen no objection to hot water given in small quantities during the first twenty-four hours. He had found no trouble whatever in giving it in small quantities, and had used it by rectum with good results.

DR. BOVÉE said he made it a rule in abdominal work to give hot water as soon as the patient comes out from under the anesthetic; it tends to stop vomiting. He had used salt solution during the last three years, under the skin and in the abdominal cavity, when very large tumors were removed. He also gave large rectal enemata.

DR. JOSEPH TABER JOHNSON read the paper of the evening, entitled

PUS IN THE PELVIS.¹

DR. FRY, in opening the discussion, said that there was one point upon which he and Dr. Johnson had been on opposite sides of the fence, and that was in regard to treatment of pus in the pelvis. Dr. Johnson takes the ground that he himself had long occupied; he had for fifteen years been opening these abscesses, and his patients had been restored to perfect health. He had incised the vagina freely, put in his fingers, and broken up the abscess partitions. He did not believe in gauze drainage, for it only plugged up the wound. If he did use gauze he removed it frequently and washed out the cavity; but he preferred a rubber drainage tube—the sac soon collapses and the patient is cured. He advised this method on all occasions, and was glad that Dr. Johnson had gone over to this way of thinking. He thought that discussions should not lead to side issues. Dr. Johnson gave several cases that were not cases of pus in the pelvis; pus in the pelvis meant pus in the true pelvis. Pus sacs were frequently walled off by the intestine, uterus, etc. If it was high up he felt afraid to push up a grooved director, but preferred to use his fingers, breaking up the sac partitions at the same time. The existing conditions were, first, pyosalpinx; second, tubo-ovarian abscess; third, ovarian abscess; fourth, abscesses beginning in the peritoneal cavity, but which by constant burrowing and being walled off become extraperitoneal, hence in operating through the abdomen it was necessary to go through the top of this sac. Dr. Johnson had mentioned twelve instances where the vaginal route was best; he had not thought of so many. If the patient was very ill and septic, she would improve after the evacuation of the pus, and an abdominal section might be done later. We should certainly give these patients a chance to get well. The mortality in abdominal cases is put at from 20 to 30 per cent. Dr. Haggard collected mortality statistics, 18½ per cent. Seven years ago, at a meet-

¹ See original article, p. 24.

ing of this Society, Dr. Johnson had expressed his opinion as to treatment of pus in the pelvis, and Dr. Fry quoted from the minutes of that meeting as follows:

"The 149th Meeting of the Washington Obstetrical and Gynecological Society—December 5, 1890.

"PUS IN THE PELVIS: ITS CAUSES AND TREATMENT.

"DR. TABER JOHNSON said: There are only two operations worthy of consideration, viz., puncture and drainage through the vagina, and abdominal section. The first is not scientific and is sometimes dangerous. Pockets and sacs of pus may form and the puncture empty only one of them. If we are sure there is only one sac and that there is no danger of leakage, then the vaginal puncture might answer; but if the aspirating needle is forced through the vaginal wall, no one can tell exactly where it is going or what tissue it will injure. As soon as there are evidences of pus in the pelvis the *ideal, safest, and most radical, as well as curative operation is abdominal section, enucleation of the sac, irrigation, and drainage*. When this can be done, success is usually complete.

"DR. FRY said: In some cases vaginal puncture is indicated as the safer procedure, and it will not subject the patient to the risk of abdominal section. In suppurative peritonitis a sac is formed by agglutinated omentum, intestines, etc.—that is, the pus is confined, but there is no true sac to be enucleated. In one case of pus in the cul-de-sac resulting from criminal abortion I punctured the vaginal wall, evacuated a large quantity of pus, and cured the patient by drainage. If the abscess points in the vagina posteriorly I consider it good surgery to puncture it. If the suppuration is behind the cervix the vessels, uterus, etc., could be avoided by a small incision, which can be dilated sufficiently to drain and wash out the sac. Some of these are cured, and those that are not can be relieved later by laparotomy, which is not as dangerous as at first. In one case the tumor was situated behind and to the left of the uterus, which I took for an extrauterine fetation. I detected fluctuation and drew off some pus by the aspirator.

"Dr. Taber Johnson was called in and proposed abdominal section, while I advocated puncture and drainage. In order to settle the matter Dr. J. Ford Thompson was called in and agreed with Dr. Johnson. Abdominal section was performed, and an abscess of the ovary with one large cavity was found. In attempting to remove the cyst its walls broke and let the pus out into the peritoneal cavity. The patient recovered slowly. I am still convinced that it would have been better for this patient if puncture had been done first and laparotomy later if necessary. In some cases puncture, and in others laparotomy, is indicated."

DR. J. FORD THOMPSON said he had come to hear more

radical surgery. He had opened pelvic abscesses through the vagina before gynecology became a specialty. He was astonished at an operator whom he considered radical putting forth such views as were expressed in the paper. The tendency of surgery now was to go to the bottom. If he had an abscess to open, even of a gland, he did not consider that he had done his duty until he removed the offending structure. The opening of an abscess did not cure it. The only excuse for Dr. Johnson's procedure was that the patient was too ill for a radical operation. He was astonished at the good results reported. The mere opening did not usually cure; there was required enucleation of the tubes, ovaries, and all the pus sac, if possible, which is easily done.

He was called to see a patient with pus in the pelvis, and thought her too ill for celiotomy; but after the incision was made and the pus evacuated he easily enucleated the tubes and an ovarian cyst as large as an orange. The French take away the tubes, ovaries, and even the uterus. Richelieu takes away this organ and is never satisfied if it is left. Dr. Thompson grasps the cervix with a volsella forceps, has it held well forward and downward, makes the incision into Douglas' sac, and widens the incision on either side. The whole pelvic contents can be very easily felt, brought down, ligated, and removed. The enucleation and ligation of vessels can be done as easily as in abdominal operations. In a case operated upon at the Garfield Hospital the tubes and ovaries were removed but the uterus left. She recovered from the operation, but was not cured. Two months later he removed the uterus per vaginam, and she recovered immediately and was still well. This was what he called a radical operation. He did not believe in drainage with gauze, but he filled the whole cavity with gauze after having made it clean; then there was nothing to drain, and when the gauze was removed the cavity was as clean as the palm of his hand. He would never reduce pelvic surgery to the opening of an abscess; it was allowable only when the patient was too ill for the radical operation. In other cases he preferred to operate by abdominal section. Richelieu does the abdominal operation as successfully as the vaginal. The reason of the mortality in abdominal operations was that the pus sac was ruptured and the contents allowed to escape over the peritoneum. He sometimes cut the uterus in half and began the enucleation below. The abdominal operation was better if the pus sac had ruptured. The vaginal was very good, but the tubes and ovaries must be extirpated. When the pus was walled off either could be done. He had advocated vaginal opening if the pus can be reached. In this operation he preferred the ligature to the clamp. In reply to Dr. Fry he wished to say that unless an enucleation had been done he did not use gauze.

DR. FRY said that Dr. Thompson held that the uterus was of no use. These cases in point had gotten well and were still well. The radical operation sounded scientific, but we ought

to consider well before we subjected a patient to the risk which she of necessity underwent in an abdominal operation.

DR. H. L. E. JOHNSON said he was glad to agree with Dr. Johnson for once; he thought this was talking modern surgery. Formerly these abscesses were not freely opened. He took the ground that it was not good surgery then because it was not the custom to open the abscess freely enough. In the oldest treatment the abscess was opened with a lance and a drainage tube used. The operation was successful now because we used antiseptic precautions; formerly we feared we should infect the peritoneum. Modern gynecology tended to save as much of the normal tissue as was possible. When the abdomen was opened it was carefully cleansed, the diseased part taken away, and the tubes and ovaries, if normal, left. Removal of the uterus in childbed fever did not give good results, because the infection was general—which was frequently the case in abscesses from other causes. Dr. Fry spoke of these operations fifteen years ago. He was in touch with the profession at that time and did not think such work was being done. He thought one could not compare work done fifteen years ago with that done now. Dirty instruments and no antiseptic precautions were then used. The parts were not thoroughly cleansed either before or after the operation.

DR. BOVÉE said that this method of opening the pus sac through the vagina was the correct way in a certain number of cases—namely, when the patient was very weak and exhausted and when the pus was low in the pelvis. The abscess was freely opened and well cleaned out. He did not dignify this procedure with the name “operation.” That some patients had children after this was no argument in its favor, for some had borne children even after the tubes and ovaries were thought to have been removed by celiotomy.

If the patients, after a simple opening and drainage of the abscess, were examined in later years, a matted and adherent condition of the pelvic organs was found. Dr. Bovée thought that if the pus was high in the pelvis, above the true pelvis, the abdominal route should be chosen. Even if the cavity was not reached through the vagina and the case was not cured, she did not care to have another operation soon again, as the essayist had suggested might be done; but when the whole matter was presented to her she would prefer the abdominal operation at once.

Spilling pus in the abdominal cavity could be prevented by packing well the exposed parts with sponges and leaving in view only the parts which were to be removed. Even if the pus was spilled it was not usually septic. Dr. Bovée did not think that the uterus should be removed. He fixed it to the lower end of the abdominal incision. In 300 pus cases he had only amputated the uterus three or four times.

The tubes and ovaries, as the disease progressed and they became more inflamed and heavier, gravitated to the bottom of the pelvic cavity and became fastened, so that the enucleation

should begin at the lowest point. Dr. Bovée said that in pelvic abscesses the uterus usually formed a part of the wall of the abscess, and if this organ was removed through the vagina an opening between the septic abscess cavity and the peritoneum was made.

In operating through the vagina there was danger of tearing the bowel and not knowing it, and hemorrhage was not so easily seen and treated. He cited a case in point where, in operating through the abdomen, the vermiform appendix was so lengthened that it very nearly resembled the ureter, and it was only by finding the free end caught in the lowest part of the pelvis, in the diseased mass, that the differential diagnosis was made. If this operation had been done through the vagina he would have had serious after-trouble.

Dr. Bovée said that the uterus was not a useless organ. A large number of the symptoms due to the menopause followed with more ill effects after the removal of the uterus. Some were using with good effect the injection of ovarine in these cases. He agreed with Dr. Thompson as to the gauze packing.

DR. STONE thought we had learned nothing new from the paper or the discussion of an old subject. He agreed with Dr. Thompson that it was an old story. Abscesses had always been opened through the vagina when they pointed there. This had probably been the experience of every one present. He did not think we should dignify the opening of an abscess through the vagina by the title "celiotomy." If an incision was made and pus sacs or other diseased structures removed, as suggested by Dr. Thompson and practised by many surgeons, he would call it vaginal celiotomy. He objected to the idea conveyed in Dr. Johnson's paper that there was any new departure in what he suggested. He would also take exception to the wide scope of the paper, as it included vaginal hysterectomy for cancer of the uterus and suppurative disease of the adnexa. He thought the essayist would soon favor early operation during the acute stage of the infection and would wash the pus from the tube, which was returned to the abdomen, thus saving the organs intact. Dr. Stone had recently reported cases of this kind. In reference to the case mentioned by the essayist, with the long chart, he had personal knowledge, for he was the one referred to as having opened the abdomen and then closed it because of the difficulties encountered. He was called to the case long after its inception, and the chart even then was long and tortuous. He opened an abscess which was pointing in the vagina, which gave only temporary relief. Other abscesses formed, and she was sent to the hospital in order that an abdominal section might be made. The exploration revealed a collection of pus in the mesentery, and the diagnosis of pyemia was made. It was his intention to operate by way of the vagina in the near future, but he was prevented from doing so by illness, a result of infection from that case. He particularly wished to emphasize the lesson taught by this case, for it was one that should have had an early and radical operation, which would

probably have prevented much suffering and grave danger to more than one person.

DR. JOSEPH TABER JOHNSON, in closing the discussion, said that he expected criticism from those who were still operating on all their pus cases through the abdomen. He had himself severely criticised the vaginal route in former years, as mentioned by Dr. Fry, but his own more recent experience, and the published statements of a number of able and conscientious gynecological surgeons with whom he was well acquainted, had caused him to change his views on this question. His conversion had been gradual and honest. What was wanted was a cure of these patients, symptomatic or otherwise. If they got well by the simple means narrated in his paper, had healthy periods afterward, and in some cases had children, what did it matter if they had not had their pelvis cleaned out completely and surgically from above? He felt sure that the more conscientious men would adopt the vaginal method more frequently in the future. Probably those who are operating for applause from the galleries and to impress crowds of students would continue to open the abdomen, dig out pus sacs through masses of adhesions, regardless of their 25 per cent mortality or the subsequent condition of their patients. Dr. Johnson did not desire to intimate that other operators had any less regard for the present or future welfare of their patients than he had for his, but his paper was written and the successful cases narrated as additional evidence in favor of the vaginal approach to these pus and infected blood collections.

Dr. H. L. E. Johnson had kindly said that his paper was an up-to-date and modern presentation of the subject. That was what the essayist claimed, and he refuted the arguments of Drs. Thompson and Stone that he favored old and abandoned methods which were unsurgical and incomplete and scarcely worthy the name of "surgical operation." Dr. Johnson said that his views in regard to abdominal surgery in appropriate cases remain unchanged, but, in common with many other surgeons whose pamphlets on this subject he produced, he had come to believe that the vaginal route to pelvic pus was followed by much less mortality than the abdominal in adherent and complicated cases. Among his cases were four operations for vaginal hysterectomy. Dr. Fry had referred to Dr. Haggard's paper at the Nashville meeting of the Southern Surgical and Gynecological Society last November, in which he stated the mortality of the abdominal operations collected by him in the last year in five New York and Baltimore hospitals at 18.5 per cent.

Dr. Fry stated the usual death rate from abdominal operations for adherent pelvic pus sacs to be from 25 to 30 per cent. Dr. Stone's paper on this subject stated his mortality in a certain series of 20 cases of large pelvic abscesses, reported several years since when laparotomy had been done, a mortality of 25 per cent. Dr. Johnson claimed that if he had done these operations through the vagina he would have had a

greatly reduced death rate or none at all. He read also from a reprint of Dr. Bovée reporting 66 pus cases, all operated through the abdomen, without even a single case of vaginal drainage, in which he reported a 16 per cent mortality, several of the patients dying of shock within a few hours. Dr. Johnson thought many of these bad cases could have been saved by the vaginal operation described in his paper. One of the strongest points made in the paper was the avoidance of the post-operative sequelæ following the lately perfected and complete abdominal procedure. We all knew too well what they were and how much trouble they gave. No one had drawn more emphatic attention to them or denounced them so severely as Dr. Joseph Price in his paper in *THE AMERICAN JOURNAL OF OBSTETRICS*. He attributed them to timid, incomplete, and ignorant surgery, and boldly intimated that many of the operations that he was now doing were to liberate the adhesions produced or left by the imperfect work of others. Dr. Johnson claimed that none of these conditions could be blamed upon the surgical operation. In reply to the argument that troublesome adhesions and dangerous pus sacs were left in after the vaginal operation, the essayist pointed to the cases reported by himself and many others of permanent and uncomplicated recovery, and that, in addition, there was no shock and no mortality whatever. In regard to the statement that he had advocated old and abandoned methods of treatment, the essayist said that he thought he was in good company when such men as Henrotin and Watkins, of Chicago; Cleveland, Hanks, Polk, Mundé, Boldt, and Vineberg, of New York; Kelly, of Baltimore, and others in this country, and many prominent gynecologists abroad, were advocating it. He read from Dr. Hanks' paper that, after operating by the abdominal route for fifteen years, he had for "the last two years done nearly all his pus cases by the vagina, and often added vaginal hysterectomy when both ovaries and tubes and uterus were badly diseased. He also quoted Dr. Haggard as saying that the question of operating for pus would soon be revolutionized and that the operation of the future would be through the vagina. Dr. Johnson claimed that he was not only and entirely up to-date, but a little in advance of some present in advocating a very simple, easy, quick, and safe method of ridding the patient of the pus in her pelvis.

Stated Meeting, Friday, November 19, 1897.

The Vice-President, H. L. E. JOHNSON, M.D., in the Chair.

DR. I. S. STONE showed a

TUBE AND OVARY REMOVED POSTMORTEM,

with the following history:

The presentation of this specimen affords an opportunity for the consideration of so-called conservative operations upon the

uterine adnexa, and incidentally to make brief allusion to operations for pus in the pelvis. This tube and corresponding ovary were removed portmortem from a patient at Columbia Hospital on Sunday morning, November 7.

The patient was a colored woman from Virginia, age about 27 years. She had the usual symptoms of salpingitis, which had existed for five years. She had been in the hospital for several days awaiting operation, and was apparently recovering from an attack of recent infection engrafted upon an old chronic condition of her pelvic organs, a result perhaps of other and repeated doses of gonorrheal poison.

The uterus was fixed in the pelvis by firm adhesions, and a typical "pus case" was diagnosed. Having in mind the very great importance of conservative treatment of these cases, and being supported by very satisfactory results, I was led to risk the retention of this specimen. After a clean and careful enucleation of the left tube and ovary, both of which were much distended with pus, it was possible to separate this one also from its bed of adhesions, and by shortening the broad ligament of the left side it was fairly well held in a higher and better position than before. The patient had no shock or other trouble after operation until the bowels refused to respond to the usual purgation administered after such operations. The chart will show the absence of fever, and there were no alarming symptoms until the end of the third day, when extreme distension set in and all efforts failed to bring about a satisfactory movement of the bowels.

During the afternoon of the Saturday following the operation it was evident that the patient was not holding her own, and an effort was made to ascertain the cause of the obstruction. When the wound was opened a small quantity of bloody serum escaped, but there was very little evidence of peritonitis present. Light adhesions in the pelvis around the seat of the operation, between the bowel and other peritoneal surfaces, were separated, there being a decided adhesion in the vicinity of the right appendage. The bowel was distended at this point, and was brought up into the wound and an artificial anus quickly made. The obstruction was not satisfactorily explained, and there was evidently some other cause. On the right side, over the ascending colon, a long band appeared to tightly constrict the bowel, and it was with much difficulty that this was discovered to be a twisted gut, the band in question being the fibrous striated band peculiar to the colon. My first thought was that this band was adventitious, for it was an unusual development, or, in other words, an abnormality. During this time the patient was being transfused with salt solution into the median cephalic vein, and she left the table quite as well or better than when she was placed on it. Her pulse was 124 when the operation was begun, and improved decidedly after the transfusion was begun. But the improvement was only temporary, as the patient died in six hours, notwithstanding a second transfusion. I should have mentioned above that

an attempt was made to empty the greatly distended bowel by an opening which discharged a quantity of thin fecal matter.

Dr. Medford made the autopsy and handed me this specimen. He reported adhesions between peritoneal surfaces in the pelvis, and especially in the vicinity of the right tube and ovary, but could not find any other point of obstruction.

At the operation there was no pus found in the tube, and, after separating the fimbria and suturing the distal extremity well open, it was returned to the cavity. It has been my practice to leave such tubes as this one when the acute symptoms had passed. In fact, this is the first case occurring in my service where untoward results followed such conservative work. The last death from a celiotomy for pus dates so far back that this result is a very great surprise.

By reference to the list of operations it will be seen that the last death in my service in Columbia Hospital, in which a complete operation was done for pus, occurred on or soon after May 11, 1895. Since that time 223 operations have been performed, with no death following an operation for pus. During this time a few cases have been subjected to vaginal incision. One of these died within twenty-four hours of asthenia. Two others were not benefited by vaginal incision or required two or more incisions with emptying of pus sacs.

I have already reported one death due to organic stricture of the large bowel, which occurred in a woman subjected to laparotomy for salpingitis (Medical Society, soon after January 6, 1895).

It is quite within the bounds of possibility that this patient would have died of obstruction if the operation had been performed for any other reason. There is no reason for the twisting of the large intestine. The chart gives but little information; the temperature is subnormal and the pulse quick.

Finally, let me say that conservative operations on the uterine adnexa are far more frequent than many are led to believe. In the last 70 cases where celiotomy was done, forty per cent were for pus; 10 of these had one appendage removed, and 4 had neither one extirpated. The last mentioned were chronic cases, and were at the time of section without free pus in either tube or ovary. When possible the uterus is suspended in some manner in its normal position to prevent a return of the fixation.

DR. H. L. E. JOHNSON said Dr. Stone should be commended for reporting cases of this kind, for it was from these cases that we learn. He thought it would have been well to have had a microscopical examination made to determine the bacteria present.

DR. J. T. WINTER read a paper on

CRIMINAL ABORTION.¹

DR. M. F. CUTHBERT, in opening the discussion, said: All

¹ See original article, p. 85.

of us have been annoyed with this class of patients. Crime has been done; we are called and assume the responsibility and often get the blame. Conscience has very little to do with it, either in the patient or the person who does the work. The only way to affect this class of people is by home influence. The Roman Catholic Church looks with such disfavor on this crime that there is less of it among them than any other class. The speaker said that he saw a case of criminal abortion about four years ago with Dr. Volhaupter that died of tetanus, the most horrible case and the most horrible death he had ever seen.

This evil seems to be getting worse, and the cause is probably the numerous newspaper advertisements. It is surprising to note the class of women who go to these men. Some of our best people go, knowing their reputation.

Dr. Cuthbert cited a case at the Emergency Hospital of a young girl who had used a knitting needle to produce an abortion and had punctured the cervix in several places.

About twenty per cent of pregnancies end in abortion. It is astonishing how much hemorrhage we can get from a comparatively small uterine lesion. The speaker cited the case of a colored woman who bled so much that she was absolutely pale. After packing the vagina for several days with gauze the uterus was curetted and a very small piece of tissue was found, but the bleeding was stopped.

The remedy for criminal abortion is in home influence and the press. The law is a dead letter, as it is impossible to enforce it, owing to lack of witnesses and inability to fix the responsibility. The newspapers contain accounts of arrests but no convictions.

Those women who come to us after the abortion has been done do not hesitate to say that the operator told them to go to their family physician. Some cases we do not recognize, because it is so early that it is mistaken for menstruation.

The dangers are hemorrhage and septicemia, and it is surprising how ill they get and yet recover. The treatment, after the abortion is inevitable, is to curette with a sharp curette, wash out with sterile water, and swab the cavity with carbolic acid and iodine. He cited a case in which there was a temperature of 106° F., the joints being affected, the patient recovering.

DR. S. S. ADAMS criticised the profession for attending these women, saying that they would not hesitate to get us into trouble and would be the very last to help us out. He cited the case of a young girl whom he had advised to get married, who had asked him if he would attend her if she had an operation done. Soon after the man who did the operation came to him and thanked him for referring the case to him. Dr. Adams thought the profession should take some step to see that they are not made dupes of, even if it is only to refuse to sign the death certificate.

DR. I. S. STONE, after speaking of the best way of getting those who do these criminal operations out of the Association,

cited the case of a woman whom he had seen and who was very septic, in whose uterus he found a sponge tent, the physician having abandoned her, thinking she would die. He also told of a woman who had come to him for treatment; he found her pregnant. She returned after several months and wanted him to perform an abortion, saying he had done so before. Dr. Stone thought we should be very careful how we treated this class of patients.

DR. W. M. SPRIGG said it was the duty of every physician to explain the dangers arising from this procedure, to tell the women that the child is formed at the very beginning, and that it is just as much murder then as when the child is born alive at term to strangle it.

DR. H. L. E. JOHNSON said that these women were divided into two classes, married and unmarried. He agreed with Dr. Sprigg that we should temporize with the married, getting them to hope that their menses would soon return, until they thought it is too late to have anything done. With the unmarried there was scarcely any argument, except it might be that of shame; if they should die it would all come out. Dr. Johnson spoke of a woman, 45 or 50 years of age, who gave him a jointed sound, saying she had made use of it during her child-bearing period of life.

DR. C. N. ACKER asked if any one had seen a death from hemorrhage after abortion.

DR. CUTHBERT mentioned a case that had miscarried at the third or fourth month, who had died from this cause.

DR. E. L. TOMPKINS cited the case of a woman whom he had been able to prevent from having an abortion done by treating her as Dr. Sprigg had suggested.

DR. J. THOMAS KELLEY mentioned a case he had seen that day with Dr. Appleby. The girl had aborted seven days before, and at the time he saw her she was very septic, the temperature being 104° F. The uterus was cleaned out well and packed firmly with iodoform gauze to control hemorrhage, of which there was quite a little. Dr. Appleby had told him that he always made it a rule, when he saw a very ill patient after criminal abortion, to call in another physician.

DR. W. M. SPRIGG said a sharp curette should not be used after an abortion; he had used the dull curette in a great many cases and had never failed to get away all the material and to bring down the temperature. He would pack with gauze to control hemorrhage. The particles of membrane were squeezed into the meshes of the gauze and came away when it was removed.

DR. J. T. WINTER closed the discussion by citing numerous instances in his practice where he was called upon to treat women after they had been to professional abortionists.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY.

TWENTY-THIRD ANNUAL MEETING, HELD IN BOSTON, MAY 24, 25, AND 26,
1893.

The President, PAUL F. MUNDÉ, M.D., in the Chair.

—
First Day—May 24.

THE ADDRESS OF WELCOME

was delivered by DR. A. C. SINCLAIR, of Boston, on behalf of the Boston Obstetrical Society and of the local profession generally. He said that twenty-two years ago Dr. J. R. Chadwick had taken the initiative in establishing the American Gynecological Society. Its first annual meeting was held in New York, with thirty-nine names on the roll. Half of the founders had been removed by death.

CONGENITAL PELVIC KIDNEYS OBSTRUCTING THE PARTURIENT CANAL, WITH THE REPORT OF A CASE OF VAGINAL NEPHRECTOMY.¹

DR. EDWIN B. CRAGIN, of New York, read a paper with this title.

DR. HOWARD A. KELLY, of Baltimore, said that cases of this kind should be put on record. He had met with three displaced kidneys—one on the left side, in which the kidney was intrapelvic, and two on the right side. The first case occurring in his own practice was observed on the operating table in a person who was about to be operated upon for some other abdominal condition. The diagnosis was made of displaced kidney before opening the abdomen, and this diagnosis was confirmed at the operation.

DR. HUNTER ROBB, of Cleveland, said that one of the cases referred to by Dr. Kelly was one of double tubo-ovarian disease in which the kidney presented just above the brim of the pelvis. At first he had thought it was simply an adherent tube and ovary. On abdominal section the tube and ovary were found adherent on the right side, and the kidney immediately above it. Nothing was done with the kidney, as there were no symptoms referable to it.

DR. S. C. GORDON, of Portland, said that he had met with a displaced kidney in a man upon whom he had operated for the removal of a tumor. This tumor proved to be the kidney, which was located at the brim of the pelvis. After operation no urine was secreted, and death resulted from that cause.

¹ See original article, p. 36.

DR. E. C. DUDLEY, of Chicago, said that he had also removed a kidney situated below the brim of the pelvis in a man, but the tumor had been removed from a cadaver in the dissecting room, and not at operation.

DR. PHILANDER A. HARRIS, of Paterson, said that in one instance he had found the left kidney located in the true pelvis in a woman upon whom he had operated about three years ago. She was never well after the operation, but lived about two years. He asked whether Dr. Cragin would remove a healthy kidney in a pregnant woman. It seemed to him that with symphyseotomy, Cesarean section, and the Porro operation at our command such a procedure was not advisable.

DR. ROBB asked Dr. Cragin if he had found it necessary to strip the peritoneum and capsule from the kidney. In dogs he had proved that it was unnecessary to strip off the peritoneum from the kidney.

DR. GORDON said that last May he had removed the kidney from a woman who had had an enlarged and troublesome kidney for a considerable time. The woman lived twenty-seven and a half days after operation, although not a drop of urine had been secreted. The autopsy showed that there was no other kidney.

DR. J. WESLEY BOVÉE, of Washington, D. C., remarked that most of the anomalous ureters reported had been found on the left side. It seemed to him that nephrectomy was an unnecessarily severe measure in these cases. At one autopsy on a case he had found both kidneys fused together just at the division of the iliac arteries. The specimen was eleven inches long and weighed about two pounds. There were two ureters on one side, and one ureter on the other side. The specimen was at present in the Army Medical Museum.

DR. J. CLIFTON EDGAR, of New York, asked if any attempt had been made by Dr. Cragin, by change of position or otherwise, to push the tumor up. He made this inquiry because he had been amazed at what could be accomplished in cases of prolapse of the cord by inversion of the patient.

DR. CHARLES P. NOBLE, of Philadelphia, said he had had one case of congenital displacement of the kidney. The organ was situated near the sacro-iliac junction. On opening the abdomen a retroperitoneal tumor was found, and on cutting through the peritoneum the kidney was recognized, but was not disturbed, as the urinary symptoms prior to the operation had shown the kidneys to be unsound, and he did not know which one was affected. A Cesarean section, he said, was no more grave than a nephrectomy, and if the kidney were not diseased in a case of dystocia due to displaced kidney, it seemed to him that the former operation would be preferable.

DR. PAUL F. MUNDÉ, of New York, said that he had met with two cases of intrapelvic, and evidently congenitally displaced, kidney. Both of the cases occurred several years ago and had been reported.

DR. CRAGIN closed the discussion. He said that although

a number of cases had been reported, he had only found six cases in which the displaced kidney had obstructed labor, and hence he had not laid stress on the others. He would certainly not recommend the removal of a normal kidney, but in his case the displaced kidney was disorganized and converted into a cyst. He had stripped back the peritoneum, but had not disturbed the capsule. Owing to the shortness of the ureter and renal vessels, the kidney could not be pushed up, as suggested by the inquiry of Dr. Edgar.

CASES OF PREGNANCY FOLLOWING VENTROFIXATION, AND
IMPROVEMENTS IN THE TECHNIQUE OF THE OPERATION.¹

DR. A. LAPHORN SMITH, of Montreal, read this paper.

THE TREATMENT, THROUGH THE POSTERIOR VAGINAL CUL-
DE-SAC, OF ADHERENT UTERI.

DR. W. R. PRYOR, of New York, in presenting this paper, stated that there had been much speculation regarding the mode by which the adhesions were produced in many cases. It seemed to him not improbable that they might be the expression of a low form of peritonitis due to pathogenic germs escaping from the adjacent bowels. Such a theory would apparently explain that form of adherent uterus most commonly seen in robust servant girls. In some cases the anterior vaginal wall was exceedingly short, and retroflexion was as marked as retroversion. He had been unable to cure these cases, he said, by any operation. The complicating adhesions varied according to the manner in which the infection reached the peritoneum. Where gonorrhea caused the retroposition and fixity, the tubes were most damaged and the adhesions between the retrouterine structures was least. Those who had seen many of these cases from the peritoneal side were loath to recommend massage and forcible replacement. It should be premised that operations for the relief of adherent retropositions were not to be judged by the number of pregnancies. The first step was to free the uterus. All operations on the displaced uterus must be done with due regard to its function, and hence ventrofixation was a bad operation. This did not apply to fixation *high* up. The operation through the belly was really attended with less traumatism than that for the separation of the bladder from the uterus. Kelly's operation of hysterorrhaphy was the operation of election where the removal of either tube or ovary was found necessary. In this word "necessary" was to be found the key. All operations anterior to and above the uterus made no provision for the escape of fluids. In all evacuation operations, whether on the ovary or tube, the freest possible drainage was essential. If the products of parenchymatous oozing were removed immediately, it was apparent that hemostatic suture would be rendered unnecessary. If these operations could be done without suture the repair would be much more prompt and

¹ See original article. p. 66.

satisfactory. Suturing should be necessary only when large portions of the ovary were removed or small spouting vessels cut into. The posterior cul-de-sac operation, because of the position of the incision, enabled the operator to apply conservatism in a class of cases in which he would not dare to attempt it in other operations. Undoubtedly the uterus was held up forward by ventrofixation and by the various operations for shortening the round ligaments, but he contended that the operation of Mackenrodt between the vagina and bladder was not desirable; indeed, this had been well shown by the statistics of Edebohls. In the service of Drs. Bull and Coley at the Hospital for Ruptured and Crippled, New York, 24 inguinal operations had been required after Alexander's operation. All but one of these herniæ developed within one year after the operation, and many were bilateral. In doing the operation which he advocated, the uterus was curetted and the cul-de-sac entered by the finger. The uterus was then lifted up and held in position by several gauze pads. In the present paper he excluded from consideration all cases showing the presence of pus. After the adnexa had received proper treatment, the cervix was forced upward and the upper part of the vagina was tightly packed with gauze. A catheter was left in place until the second day, when, the bowels having moved, the catheter and the gauze were withdrawn. The dressings were renewed until the cul-de-sac had closed. The patient was out of bed in about two weeks. If amputation of the cervix and perineorrhaphy were indicated, they were performed after three months. The speaker said that in all those replacement operations which were successful, either the body of the uterus was elevated and brought forward or the cervix was raised and placed backward. Hernia could not occur through the scar, because at this place the vagina had a greater thickness than normal, and because it was under the protection of the sacral promontory. The cervix being high and the uterine body free, there was no tendency to abortion. The after treatment was undoubtedly troublesome, and must be carried out precisely as in the case of other open wounds, but the advantages of the operation outweighed this objection.

DR. H. A. KELLY said that this suggestion to operate on the posterior pole of the uterus was most rational from a mechanical standpoint, but there were certain difficulties connected with the technique which demanded careful consideration and experimentation before a final judgment could be passed. His own preference had been for hysterorrhaphy or suspension of the uterus—not fixation. Out of 110 of these operations done since 1889, all of them through the abdomen, not one had died, nor had a single case developed ileus or, indeed, any serious morbidity. There had been very little vesical disturbance, particularly since he had been using rectal enemata of saline solution on the operating table. With one exception there had not been anything unusual about the subsequent pregnancies. This one exception, however, had thrown a good deal of light

on the proper method of operating. She was one of the early cases, done according to a method which had proved faulty. Suppuration occurred, making it necessary to remove the sutures. As a consequence, extensive adhesions formed between the uterus and the abdominal wall. She became pregnant and was delivered after a difficult forceps operation. She recovered with an infection on the left side. This case emphasized the great importance of not "fixing" the uterus. The uterus should come up easily and lie almost in touch with the abdominal wall. When the pelvis was deep he modified the operation by catching the peritoneum behind the symphysis pubis and pulling it over the top of the uterus, and so getting rid of the traction. As a matter of fact, however, there always was some traction, owing to the filling of the bladder and to the fact that the uterus does not lie normally in contact with the abdominal wall. For some months the ligaments are pulled out and the uterus is in a perfectly normal anterior position and "at rest." Those who were specially interested in the statistics of this subject should give an analysis of the difficult labors based upon the exact method of operating. He had recently collected the various operations, and had found that there were no less than 45 different methods of treating the uterus. Personally he preferred the direct operation, getting at the uterus through the abdominal cavity, rather than doing Alexander's operation. Both operations were substitutes for the normal, for the round ligament was not put there by Nature to hold the uterus anteriorly, except under unusual conditions. If the ligament did any active work in holding the uterus forward, it would not appear, as it does, as a soft, lax cord when viewed through the abdomen at operation. Dr. Kelly said that he had found in subsequent laparatomies that some of these round ligaments rupture after Alexander's operation. One patient recently examined in this way after pregnancy and delivery showed the uterus in a backward position and the ligament greatly elongated. It measured 19 centimetres in length from the posterior surface of the uterus to the anterior abdominal wall, and was only 1.5 millimetres in diameter. He still preferred the suspensory operation, which he had practised for so many years, and he would continue to practise it unless more cogent reasons were advanced in favor of some other method.

DR. A. PALMER DUDLEY, of New York, said that he had reported to Dr. A. Lapthorn Smith that he knew of three cases of pregnancy having gone to full term and normal delivery after suspension of the uterus done by himself. In one of these cases, a single girl, in whom the suspension was done in May, married the following October and did not menstruate afterward. She was an extreme sufferer during the whole of the nine months of pregnancy, the traction on the scar producing so much uterine action that her suffering was intense. She was delivered at full term, with the aid of forceps, of a child weighing eleven and a half pounds. The uterus returned to

its position, and she is now in good condition and the uterus in good position. The other cases also had more or less pain, which they would never have had if the uterus had not been suspended. After watching these cases he determined not to do another ventrofixation if he could avoid it. He had only used the buried suture in two or three cases, and in those he had had to remove it. He therefore believed that ventrofixation was not the best operation for the reduction of the retrodisplacement of the uterus. In his opinion as much could be accomplished by shortening the round ligaments internally—in fact, more—than by suspension. If such a woman became pregnant there was less traction and the ligament would do as well as an artificial ligament and would not stretch. However, he would never do an Alexander operation if he could help it. He would like to see the surgeon who was so perfect in his diagnosis that he could say that all of his cases were not complicated by inflammations, adhesions, etc. It was true, as Dr. Pryor had said, that hernia was a frequent sequel of the Alexander operation. He saw two objections to Dr. Pryor's method, viz.: (1) It was necessary that the pelvic floor be movable, just as much as it was requisite that the uterus should be in anteversion; (2) scar tissue in the vagina was objectionable in married women subject to sexual intercourse, because it would be tender. Again, he saw no occasion for making two or three incisions when the same work could be done through one. In none of the 15 operations done in the past year had he regretted "knuckling" the round ligament within the abdomen. If the ligament were properly scarified, doubled upon itself, and sewed together in two directions, it would be held securely and there could be no intestinal adhesions whatever.

DR. NOBLE said that what he had seen in the last two years had not particularly altered his belief that fixation of the uterus in child-bearing women should certainly be abandoned, and that of all the methods of doing *suspensio uteri*, that of Dr. Kelly had given the best results. If both appendages must be removed, a supravaginal hysterectomy can be done with scarcely any additional risk, and the retroverted and adherent uterus is of no use. This was much better than sewing the uterus to the abdominal wall, thus leaving a raw surface on the posterior aspect of the uterus, which favors adhesion of the intestine. It seemed to him a mistake to allege that *suspensio uteri* has any influence in causing miscarriage. Dr. Smith had stated that miscarriage occurs in 6 per cent of the cases, and in his own table it amounted to 10 per cent; but it was well known that 10 per cent of all cases of pregnancy miscarry, so that these figures did not prove anything regarding the influence of this operation. Dr. Noble went on to say that in a number of cases, both of *suspensio uteri* and of Alexander's operation, done by himself and by others in the past two years, relapse had occurred. In two cases the uterus dropped back before the women left the hospital, although they had been operated upon by Kelly's method; hence, unless the uterus was

attached with reasonable firmness, the operation would be a failure in a certain percentage. In two cases out of about 75 Alexander operations the round ligament had stretched (in one case in six months and in the other within a year), and in both of these cases he felt certain that there were no adhesions. In two cases operated upon by other surgeons the round ligaments were found, about one year after operation, to have stretched.

He had also tried the intraperitoneal shortening of the round ligaments, according to the method of Dr. Mann, in four cases, and the results had been very satisfactory so far. He would advise the use of a pessary for a while after suspensio uteri, to prevent the stretching out of the artificial ligament.

Two years ago he had seen Dr. Pryor work through the vault of the vagina, but he had not been tempted to follow this method himself because of the greater difficulties as compared with working through the abdominal incision. He did not think the risks alluded to by Dr. Pryor really existed.

DR. H. J. BOLDT, of New York, said that in cases of posterior displacement with adhesions he did not doubt, if the adhesions were so firm as not to be separated manually, that the only treatment was opening the abdomen and doing a ventrofixation. If, however, there was disease of both of the adnexa to such a degree that the appendages required removal, he did not think we had any right to do that operation through the abdomen. Last week he had seen a patient upon whom he had operated some years ago for adherent retrodisplacement of the uterus. The uterus had been firmly adherent and the fixation had been made anteriorly very easily. On reopening the abdomen a few days ago to remove the right ovary, he had found a very thick pseudo ligament which had formed between the parietal peritoneum and the uterus. On separating it so much hemorrhage was caused as to necessitate the use of a suture. There was also an extensive adhesion to the omentum. Many years ago he had recommended simply bringing the uterus forward and fastening it by a single suture, but he did not now think it would give a permanently good result in all cases. In his opinion the Alexander operation gave less trouble than any other method, provided the cases were properly selected. Of course it would not be selected where there was descent, adhesion, or disease of the adnexa; but where the uterus was freely movable, and in women in whom the adnexa could be carefully mapped out, he considered it *the* operation to be selected.

DR. EDWARD REYNOLDS, of Boston, said that Dr. Pryor had spoken of a class of cases in which the uterine body was adherent to the posterior peritoneum. This was extremely interesting to him, because he had seen three out of the five cases referred to. In the first case he was inclined to doubt his diagnosis and opened the abdomen. He found the tubes and ovaries normal and the uterus adherent. He then performed vaginal fixation. A few hours afterward the patient was seized with paroxysms of pain, and these recurred at short

intervals for about two weeks, and these attacks were associated with great prostration. She eventually recovered, and was now well. In the second case the same sort of pain was noted, but death occurred in about twelve hours, apparently from nervous shock and pain. The third case was now in the hospital and was recovering from a curettage. Because of his experience he would like to hear regarding the experience of others. The only explanation he could offer was that damage might have been done to the utero-sacral plexus, which was, of course, involved in the adhesions between the uterus and the posterior wall of the pelvis, and which was known to be one of the most extensive developments of the sympathetic nervous system.

DR. MATTHEW D. MANN, of Buffalo, thought that there were a number of operations, all of which had their field of usefulness. He looked upon Alexander's operation as *the* operation where there was a perfectly movable uterus and no manifest disease of the tubes and ovaries. We could judge of this largely by *subjective* symptoms, for if these are entirely absent there is certainly no good reason for opening the abdomen. If the adhesions were slight as determined by the degree of mobility when the patient is examined under ether, he thought it perfectly proper to incise the cul-de-sac and, with the finger, break up these adhesions. Sometimes the retrosacral ligaments were relaxed and the cervix displaced downward and forward. In these cases Alexander's operation almost always failed. Here the cul de-sac could be opened and packed with gauze, thus obtaining the advantages claimed by Dr. Pryor. He did not think the holding up of the cervix was alone sufficient; he preferred to shorten the round ligaments at the same time.

It could not be denied that hernia has followed Alexander's operation, but he attributed this to the method employed. He had done about one hundred Alexander operations in the last three years, and in only two had there been hernia. He believed the extensive opening up of the intercolumnar fascia and ring was entirely unnecessary and invited hernia. If there was extensive disease of the tubes and ovaries, he favored opening the abdomen and curing the displacement by intra-abdominal shortening of the round ligaments at the same time that the other disease was treated. If both the tubes and ovaries were removed, there being then no danger of pregnancy, a ventrofixation might be done, as it was quicker and easier than the intra-abdominal shortening of the round ligaments.

In the operation of abdominal ventrofixation of the uterus he believed it to be a great mistake to use non-absorbable sutures. If chromicized or formalin catgut were used all would be accomplished that was necessary, and the results were just as permanent as though silk or silkworm gut were employed.

DR. GORDON said that he had seen Dr. A. Lapthorn Smith perform the Alexander operation, and the method seemed to him an ideal one. He did not divide the intercolumnar fascia at all, and there had been in his cases a remarkable freedom

from subsequent hernia. He was surprised to learn of so many cases of hernia following the Alexander operation, and yet we knew that the canal was opened up very considerably. Unless the peritoneum were stripped entirely from the round ligament, up to the internal opening, a glove-shaped fold of peritoneum would be carried down, and this would necessarily greatly enlarge the internal opening. His own experience with the Alexander operation had been very slight and very unfavorable, so that he did not think he would ever attempt it again. Personally, he had practised the method of Dr. Kelly. The two wounds of the Alexander operation were not theoretically good, and they seemed to be very prone to infection. By one small incision through the abdomen all that was necessary could be done.

DR. HORACE T. HANKS, of New York, said that many reflex disturbances and miscarriages occurring after ventrofixation and suspension were due to the fact that the fundus uteri was fixed too firmly. He also knew of a clinic in New York City in which even a larger proportion of Alexander's operations had been followed by hernia, although the operations had been done by skilled and experienced surgeons. He thought the reason we did not succeed well in ventral suspension was that we did not do the operation recommended by Dr. Kelly. He had endeavored to follow Kelly's method exactly, and with increasingly good results. That method necessitated that the uterus should not be firmly fixed, and this seemed to him the secret of the great freedom from reflex symptoms in these cases. He had operated 46 times by this method, making the incision through the rectus muscle and fastening the uterus with two or three silkworm gut sutures in the median line. In this way the fundus uteri was not directly embedded in the abdominal wound—a matter of considerable moment, for he believed it was the cause of much unnecessary distress.

DR. R. STANSBURY SUTTON, of Pittsburg, said that in doing suspension of the uterus he had followed a method which had not yet been mentioned. The patient was placed in the Trendelenburg posture and a large and properly constructed staff inserted in the uterus. The fundus was then turned against the abdominal wall and a cut made down to the peritoneum; with a running catgut suture the fundus was sewed to the abdominal wall. The operation was easily performed and the abdominal cavity was not opened.

DR. E. C. DUDLEY, of Chicago, said that if Alexander's operation were confined to those cases in which the uterus was not fixed and there was no disease of the uterus or appendages, its field of usefulness must be quite limited. In a number of cases he had noticed that the uterus had been pulled forward against the bladder by Alexander's operation and caused irritation of the bladder. This seemed to him to occur chiefly in those cases in which the utero-sacral ligaments were inadequate. If the uterus was so diseased that the normal mobility at the angle of reflexion was impaired and the uterus remained

straight (as in an old metritis), then the uterus was much more apt to go back after any operation for shortening the round ligaments, unless the cervix could be fixed back in the hollow of the sacrum. The conflicting opinions regarding ventrofixation, he thought, could be reconciled by attention to the question of whether or not the fixation produced by these operations remained permanently. When the anterior wall of the fundus of the body was fixed to the anterior wall of the abdomen, it was necessary to make very broad adhesions, scarifying the peritoneal surfaces, or there would be great danger of the uterus returning to its previous posterior malposition. These broad adhesions were, however, extremely objectionable, for the reason that there was really no normal position for the uterus—it was really a question of the normal mobility of the uterus.

On general principles, therefore, and without any reference to dystocia, the operation of permanent fixation should be condemned. In order to make a suspensio uteri which will be permanent, it is necessary to stitch to the abdominal wall the posterior wall of the corpus at a point a little back of the summit of the corpus uteri. This should be done by light sutures and without any scarification, and a new ligament would soon form under these conditions. His own experience comprised about one hundred cases, and he knew that in three of these pregnancy had occurred without any trouble whatever. So far as he had been able to follow these cases, in every one of them there had been a perfect anatomical cure, and the symptomatic cure had also been quite satisfactory. He also used catgut for the suture in these cases, and there seemed at the present day no good reason why any other suture should be used in the abdominal cavity. In many cases he had used ordinary sterilized catgut, which was not intended to resist absorption more than a week or ten days, and yet subsequent examination had shown that the anatomical results had remained perfect.

DR. ROBB said that he had had an opportunity of seeing many cases treated by Dr. Kelly. It seemed to him that a great many of these cases were operated upon unnecessarily—in other words, that many of the symptoms of which these patients complained could be attributed entirely to the position of the uterus. He knew that many of these patients entirely recovered without any operative procedure whatever. He had also observed cases operated upon by many of the leaders in this field of operative work, and he had noted no change in the symptoms after a reasonable time had elapsed. They would often be relieved shortly after the operation, but a year or two afterward they would complain of the same symptoms as before operation, and these symptoms would exhibit all their former severity. The separation of adhesions would often meet all of the indications so far as the subjective symptoms were concerned.

DR. JAMES R. CHADWICK said that there must be a very different method of performing Alexander's operation or a very different class of cases to explain the large proportion of

hernias reported from New York City. He had done the operation at least two hundred times and had followed up most of his cases. He had never met with hernia in a single one of these, nor could he see why hernia should result when the operation consists simply in cutting down on the external ring, picking up the bleb of fat, finding the cord, pulling it out, and stitching it. If anything, a cord is pulled into the canal of Nuck, which is larger than what was there previously.

DR. ANDREW F. CURRIER said that in the rectification of a difficulty of the kind under discussion one should consider especially the preservation of the normal anatomical conditions, and whatever method would do this should be the method of choice. Probably no operation, no matter how nearly perfect, would be entirely free from complications and unpleasant sequelæ. The objection to the Alexander method was the making of two wounds instead of one; hence he preferred the internal shortening of the round ligaments. A large number of cases coming with this trouble are young unmarried women, and hence it was not desirable to introduce a pessary, and disfigurement should be avoided as far as possible.

DR. GOFFE said that Dr. Pryor had stated that the proper support of the uterus lies in the utero-sacral ligaments, and he had long been looking for an operation founded on this fact. Dr. Polk had suggested such an operation, but the result had not been good and the operation had been abandoned by its originator. The great objections to Dr. Pryor's method were the troublesome after-treatment, and the danger of failure unless every detail was carefully carried out. Personally, he had been operating through the vagina for shortening the round ligament, and had presented a brief paper on the subject to the Society last year. His own results had been satisfactory to himself and to his patients. The vagina is incised throughout its whole length and the mucous membrane dissected back for at least an inch on each side of the incision. Previous to this a transverse incision is made at the cervix to give the latter a little more freedom. With the fingers it was then possible to separate adhesions and diseased ovaries and tubes and to bring the appendages down within reach. Finally the round ligaments were shortened through the vaginal incision. The ligament is doubled upon itself and stitched to the uterus just at the origin of the ligament. Where the appendages were removed on one side he had employed catgut ligatures, including the round ligaments in this, but he had found the catgut was absorbed so rapidly that the uterus did not remain in position. Three of his patients had become pregnant, and one of them had already been delivered without any difficulty.

DR. A. J. C. SKENE, of Brooklyn, said that from his point of view this branch of surgery seemed to be in about the condition of the brooks and rivers of the States of New York and Massachusetts—swollen, turbid, and rather muddy. He had not avoided the surgical treatment of retrodisplacement, but had been continually seeking ways and means of avoiding

operation. For this reason his experience was comparatively limited. He had tried the different methods and had come to the conclusion that there was a field for all of them, but that the field of each was extremely limited. He did not believe we were yet in the position to decide as to which of the methods of shortening the round ligaments is the best. Nothing has been said about the difficulties arising from scar tissue in the vagina—a subject on which he had written his first paper for presentation to the Society. He was sure that more trouble followed scar tissue in the vagina than from the wounds of abdominal section. The frequency with which the round ligament was absent had served to limit the sphere of usefulness of the Alexander operation. Not only himself but various anatomists had found that the ligament was not infrequently absent or so greatly atrophied that it was not available to use in this operation. He had in his possession specimens proving that there was not a particle of muscular tissue in the round ligament. He believed the absence of the round ligament could be demonstrated by bimanual examination. Many Alexander operations were failures, no matter how performed, because of the condition of the round ligament itself. The reason that he could not report hundreds of cases operated upon by a certain method was that he found a field for all of them, but could not bring himself to use one operation to the exclusion of the others.

DR. BOVÉE said that inasmuch as the indications for these various operations on retroverted uteri had been touched upon, he would add that there were other things besides utero-sacral ligaments which should be taken into consideration. A too short or an abnormally attached anterior vaginal wall does as much harm in the way of producing retroversion of the uterus as relaxed broad ligaments or utero-sacral ligaments. He had shortened the utero-sacral ligament in a few cases, following out much the same plan as had been recommended by Drs. Dudley, Polk, and others for the round ligament. He had also shortened the round ligament to the anterior vaginal wall at a time when he thought the method was original with him. Often the broad ligaments were so relaxed that they required shortening. This he had occasionally done by a continuous suture applied along the anterior surface of the broad ligament.

DR. A. LAPHORN SMITH said most emphatically that Alexander's operation could be done without ever causing hernia—indeed, if the operations were done after the method he followed, it would be impossible to get hernia. He put the forceps in the ring, and with his eyes shut, so as not to be tempted to make a few nicks with the knife, he pulled out the ligament. Hernia will not occur if the canal or the intercolumnar tissue is not disturbed. If Dr. Kelly saw the round ligament relaxed or curved in the abdomen, it was because the patient was nearly or practically dead; this was not the normal condition when the patient was in a state of activity. These

round ligaments, which contained nerves and muscles, he preferred to speak of as "round muscles." He would like to know in what stage of evolution the round ligament appears in animals—whether before or after the erect posture was assumed. He had never met with a case in which the round ligament had been absent altogether. Ventral fixation is the best operation only when there is no chance of pregnancy occurring. Regarding retroversion and fixation in virgins, he said that he had reported a case in which a girl of 8 years had had gonorrhœal salpingitis. She had contracted it from using the same towel as her father, who at the time was suffering from gonorrhea. Moreover, it should be remembered that the same eruption takes place in the serous membranes as on the external integument. These facts explain the occurrence of uterine fixation in these cases, which he still maintained were always the result of disease in the tubes.

DR. PRYOR said he had accepted the statement regarding the frequency of hernia only from the clinic referred to, where hernia is the special condition treated. These hernias followed operations done by the most skilful operators and by various methods. The reason that Dr. Smith does not see hernia following his Alexander operations may be that he operates upon a better class of people—those who do not have to work for a living. Hysterorrhaphy according to Dr. Kelly's plan seemed to him an ideal operation, for he had desired to broaden the field of conservatism and extend it to a class of cases which operators would not dare to attack through the belly. In the vaginal operation there are only two anatomical layers—the vaginal mucous membrane and the peritoneum—which is very different from the structures which must be divided in an abdominal section. The cicatrix in his cases was very different from those found in inflammatory cases, and it could not be detected after six months. The condition was comparable to that found in the healing of pleurisy. He recommended his operation only in certain adherent cases; it was not intended at all to take the place of Dr. Kelly's operation of suspension.

(To be continued.)

BRIEF OF CURRENT LITERATURE.

EXTRAUTERINE PREGNANCY.

John W. Taylor, surgeon to the Birmingham and Midland Hospital for Women, has recently delivered a remarkable and valuable series of lectures on this subject, two of which have appeared in the *Lancet* for May 28 and June 4. The editor feels that the matter is of sufficient importance to warrant the full abstract which follows:

Causation.—Every pregnancy is the result of the impregnation of the ovum of the female by the spermatozoon of the male, and the normal place for the development of the impregnated ovum is the cavity of the uterus, while the channel through which the ovum must pass from the ovary in order to gain the uterine cavity is the Fallopian tube. The tube may be regarded as specially fitted to be this channel for the reception and transit of the ovum. The delicate plications of its mucous membrane form the lightest and most delicate of resting places, while the innumerable cilia of its epithelium, waving always toward the uterus, tend to sweep the ovum onward and outward. These plications with their waving cilia are not confined to the tube itself, but are continued over the border at the fimbriated extremity into the peritoneal cavity and usually stretch in unbroken line from the tube to the ovary itself. Sometimes this “ovarian fimbria” is remarkably full and broad, while accessory fimbriæ, both around the abdominal ostium and on the sides of the broad ligament, complete an apparatus for the direction of the ovum which must cause a marked and ceaseless current from the ovary to the tube. In this way the ovum when shed is swept into the abdominal ostium of the Fallopian tube ; but when the ovum has entered the tube it may be considered as doubtful whether its progress is continuous and uninterrupted until it enters the uterine cavity. The adult Fallopian tube is convoluted and at every bend or turn is bound down by fibrous bands beneath the serous covering. Each of these forms a ridge or elevation within the tube which must be somewhat difficult to pass, and the progress of the ovum is probably retarded at each bend of the tube by the presence of these bands. Whereabouts in its passage does the ovum meet the spermatozoon and become impregnated ?

It was formerly held that the direction of ciliary movement in the uterus was from the cervix to the fundus, while that in the Fallopian tubes was from the fimbriæ to the uterus; therefore that the passage of the spermatozoon was helped by ciliary movement toward the fundus of the uterus, while the passage of the ovum was similarly assisted from the fimbriated end of the tube toward the fundus. On this hypothesis it was reasonable to suppose that the fundus was the normal meeting place of the spermatozoon and the ovum, and that here normal impregnation alone took place. But during recent years the direction of ciliary movement within the uterus has been ascertained to be quite otherwise, both in animals and women, an examination of the freshly extirpated uterus by Hofmeier proving that the direction of this movement is from the fundus to the cervix, and therefore that its direction throughout from the fimbriated end of the Fallopian tube to the neck of the uterus is wholly in a downward and outward direction. This being the case, the function of ciliary movement cannot be to prevent the entrance of spermatozoa, or none could enter the uterus. On the contrary, it has been directly proved that the active

movements of the spermatozoa are quite sufficient to carry them against the current of ciliary movement, and human spermatozoa have been actually discovered in the Fallopian tubes after extirpation of the appendages.

The uterine ostium of the Fallopian tube when contracted cannot favor the ingress of spermatozoa to the tube, and the entrance (or not) of spermatozoa must depend largely on the dilatation (or contraction) of the ostium. Sometimes the passage from the uterus to the abdomen must be very free, and especially so when the cervix is dilated. In six cases Döderlein experimentally injected colored solutions into the dilated uterus before its removal by vaginal hysterectomy. In all but one of the cases the solution passed into the peritoneal cavity. On the other hand, the frequent use of intrauterine injections without abdominal disturbance resulting appears to show that this open and pervious state of the tubes is not a common or invariable condition. That the normal tube admits the entrance of spermatozoa, but is not the special "receptaculum seminis," seems proved by the researches of Dührssen, who, in his "Vaginal Celiotomies for Retroflexion in Married Women," has frequently pressed a cover glass against the abdominal ostium and examined for spermatozoa. In most of his investigations he met with a negative result, but in some spermatozoa were recognized although degenerated and motionless. The truth evidently lies between the two extremes. We may hold with reason that here is no evidence whatever for the belief that the seat of normal impregnation is limited to the cavity of the uterus, while the facts which are known concerning the invasion of the tubes by spermatozoa unmistakably point to the conclusion that normal fructification of the ovum may occur at any stage of its passage from the ovary to the uterus. But if normal impregnation often occurs within the Fallopian tube, the latter has an important function which at present is altogether disregarded. If the tube has to convey the fructified ovum as well as the unimpregnated ovule into the cavity of the uterus, other forces than the ciliary movement may be necessary, and any mechanical impediment to the delivery of the ovum from the tube into the uterus may be a cause of misplaced pregnancy. The fructified ovum is subject to definite growth (in the second week it is from 3 to 6 millimetres in diameter); and though it probably soon passes from the tube into the uterus, it is evident that any want of development in the tube, any permanent contraction, any swelling of the mucous membrane, any abnormal length of the tube, any extra weight or impaired mobility of the ovum at its entrance to the tube, any failure of muscular power, or any interference with the peristaltic action of the tube, if this be needed for propulsion of the ovum, may increase the tendency toward a tubal instead of a uterine "settling" of the ovum. It has been objected by Bland Sutton that tubal pregnancy cannot be explained by obstruction to the transit of ova, because the "öösperm" (fructified ovum) is more often retained in the

wide ampullary section of the tube than in its uterine segment, and if delay or stoppage during transit of the fructified ovum always depended on the inadequate size of an otherwise normal tube, the criticism would have considerable or even fatal force. This can only be one among many causes for delay, and it is probably a rare cause. Still it is interesting to note that in a special class of cases—the cases of early rupture in which the tube, as we shall see, is ill-developed or somewhat atrophied—it is precisely at this point, or just outside the uterine segment of the tube, that arrest most frequently takes place and the pregnancy develops. On the other hand, at the outer extremity of the tube, near the expanded ostium, where not infrequently a tubal pregnancy is found, it is evident that a totally different cause or set of causes may account for retarded progress or arrest of the impregnated ovum and consecutive attachment. Here the ingoing tubal current, which, whether due altogether to the movement of the cilia or not, has been proved experimentally to exist, may lack the power to sweep the oöperm into the lumen of the tube; the ovum itself, if prematurely fertilized, may soon increase in size and weight, and the fimbriated extremity of the open tube may fail to surround or grasp it sufficiently for any muscular (peristaltic) action to be applied to it. That such an action of the tube is possible seems proved by the history of some of the cases of so-called “tubal abortion” which occur in this situation. In these cases, after attachment of the fructified ovum and some development, and after the size of the ovum has been increased by subchorionic bleeding, the tube may contract on its contents, separate the attachments, and extrude or “vomit” the mole of pregnancy out of the tube into the pelvis. If the tube possesses this reverse action when the conditions are altogether unfavorable for any movement in the ovum, it is surely reasonable to suppose that when the conditions are favorable, when the ovum is smaller and there is no attachment, natural peristalsis occurs in the normal direction from the tube toward the uterus. The activity (or otherwise) of this, depending, as it must, not only on the part of the tube involved but also on the nerve influence and on the development of the muscular coat, cannot fail to have its bearing on the progress of the ovum. In other cases, perhaps in the majority of cases, the arrest of the fructified ovum is probably determined by swelling of the mucosa. It is in the middle and outer portions of the tube and not toward the uterine segment that the wonderful plications of its mucous membrane are most luxuriantly developed, and any source of swelling affecting these would naturally attain the most obstructive power in the central portion of the tube. Such a positive source of obstruction is described in detail by Webster as produced by the occasional formation of a special swelling and growth in the deeper layers of the tubal mucosa, a swelling which somewhat closely simulates that of the uterine decidua.

Whether this tissue has any specific action is probably very

questionable. but the swollen mucous membrane may undoubtedly sometimes arrest the impregnated ovum and so determine the site of its development. Very rarely a tubal polypus has been found on the uterine side of a tubal pregnancy.

Again, a tubal pregnancy has been found on the ovarian or outer side of a myoma, the passage into the proper uterine cavity being evidently blocked by the myoma. These cases, although too rare perhaps to warrant any general deductions from them, tend undoubtedly to strengthen the argument of mechanical obstruction as an important factor in causation. Sometimes fixation or stretching of the tube is found in connection with a tubal pregnancy, and then may reasonably be regarded as having been a source of delay or obstruction to the passage of the impregnated ovum. Normal impregnation of the ovum is not limited to the uterus, but may occur anywhere in the Fallopian tube or immediately on the exit of the ovum from the ovary. Normal attachment and development is limited to the uterus only. Abnormal arrest of the impregnated ovum, whether mechanical or special, in its progress toward the uterus, is the determining factor of a misplaced pregnancy. An extrauterine pregnancy, therefore, is the consequence of the permanent arrest of a fructified ovum in its passage from the ovary to the uterus. Theoretically this arrest may occur: (1) in the ovary; (2) in the abdominal cavity between the ovary and tube; (3) within the tube; and (4) between the tube and the uterus.

The first is theoretical only. It is possible, but absolute proof of such a pregnancy seems still to be incomplete. There are conditions of intraligamentary position of the ovum, and also of encapsulated hematocele around the ovum, in both of which the ovary may form part of the outer wall of the sac containing the pregnancy. Later this becomes stretched and thin, owing to inside pressure from the growing pregnancy, and sections of the sac and outer wall discovering the presence of ovarian tissue may wrongly lead to the conclusion that the pregnancy is ovarian. The conditions described need careful elimination before any pregnancy can be held to be strictly ovarian in origin. The second—"arrest in the abdominal cavity between the ovary and the tube"—is probably always immediately fatal to the unprotected ovum, and consequently may be eliminated from discussion. The fourth point of arrest—between the tube and uterus—may quite as correctly be regarded as arrest in the uterine portion of the Fallopian tube, so that for all intents and purposes we have to do at the outset with one kind, the third kind, only—arrest within the tube, or tubal pregnancy. All other varieties are later developments of tubal pregnancy, and are caused by secondary invasion from the Fallopian tube of some other tissue or organ. These are conveniently divided into three groups or divisions: (1) the tubo-abdominal (abdominal or ventral) pregnancy, in which there is secondary invasion of the abdomen; (2) the tubo-ligamentary (mesometric or broad-ligament) pregnancy, in which

there is secondary invasion of the broad-ligament and subperitoneal tissues; and (3) the tubo-uterine or interstitial pregnancy, in which there is secondary invasion of the uterus.

Most tubal pregnancies are abortive. Some become so at a very early stage, the pregnancy resulting in early rupture of the tube. Others grow for a few weeks and then are injured by hemorrhage from their own vessels, a tubal mole forming within the unruptured tube. Others again attain a much greater degree of development and then cause rupture of the tube, perishing in the process either directly from the hemorrhage and dislocation, or indirectly from the death of the patient or from the hand of the surgeon who removes the pregnancy. It is only the minority of cases in which these dangers are averted by some more or less accidental method of growth and of extrusion from the tube, and in which the pregnancy goes to term within the organism of the mother.

1. *Early rupture of the tube* from a pregnancy or from two to five or six weeks' standing is a special phenomenon of extra-uterine pregnancy which has not as yet received the recognition and consideration it deserves. As a disease or accident it stands quite alone. There is no warning of danger, there are often no physical signs, there is no symptom before that of sudden and copious bleeding, and any history of pregnancy is either altogether wanting or is represented only by an account of menstruation delayed for one week or even less.

In these cases of early rupture it is important to notice that little or no change takes place in the affected tube, except at the exact seat of pregnancy and rupture. This may be found at any part in the course of the tube, except at the fimbriated extremity, but its favorite situation is near to the uterus on the tubal side of the uterine ostium. There is no closure of the abdominal end of the tube, and no swelling of the tube except at the site of pregnancy. On the contrary, the condition found on operation appears to show that the tube is often ill-developed and small, the muscular coat defective, and the uterine ostium contracted. The remains of the tube enclosing the pregnancy are thin and papery, and there is no evidence whatever of the slightest attempt at any compensatory growth surrounding the affected area.

It is highly probable that some amount of non-development or atrophy of the tube is responsible for nearly all the cases of early rupture. The condition may arise as the sequel of a previous pregnancy, some excess of involution affecting both uterus and tubes. There can be no doubt that the condition is a real one, and that its recognition and consideration will do much at present—and still more, I believe, in the future—to explain the phenomena attending a most important group of ectopic pregnancies. Specimens and histories may be found in our more important museums, and these abundantly show the frequent association of early rupture and diffuse hemorrhage with pregnancy of the uterine end of an atrophic or ill-developed tube, the course of which is unmarked by any alteration or

adhesions except at the site of pregnancy, and the fimbriated end of which is open.

In a large number of cases pregnancy within the Fallopian tube results in the formation of a "tubal mole" at a very early stage of gestation. Hemorrhage occurs into the "subchorionic chamber" from the circulation of the embryo. In other words, blood is poured out into the space between the amnion and chorion, the embryo is injured or destroyed, and a mole of pregnancy results in the same way as it does when a similar accident occurs within the uterus. In a very few cases the mole is extruded from the Fallopian tube into the abdominal cavity, forming a true "tubal abortion." In by far the greater number of cases, however, the "mole" remains strongly attached at one part to the inner surface of the tube. This point of attachment marks the site of what would afterward have been the placenta if the pregnancy had continued to develop, and some of the specimens of tubal mole afford good opportunities for examination into its usual extent and consistence. The union of tube and ovum is remarkably firm in this situation, but the extent of the union is limited. The mole clings to the tube like a pedunculated polypus, all the circumference of the ovum except at the point of attachment being absolutely free. Until the placental site is differentiated from the rest of the chorion, and attachment is made, the fructified ovum is probably freely movable; as soon as the attachment is formed it steadily increases in strength, and if the pregnancy goes on it is very probable that *no subsequent change will altogether separate the relations of ovum and tube.* This is not only of importance in the later stages of extrauterine gestation, as we shall see hereafter, but even at this stage the attachment of the "mole" is a source of serious trouble. For although the pregnancy becomes abortive, it does not then become innocuous or quiescent. On the contrary, the blighted ovum remains hanging from the inner surface of the tube. It is a source of continuous irritation and hyperemia in the maternal tissues to which it clings, and is the cause of repeated and dangerous bleedings from the Fallopian tube into the abdominal cavity. It is true that an attempt is made toward closure of the abdominal ostium of the tube. In acute gonorrheal salpingitis, as is well known, this closure is usually complete, but in the subinflammatory processes occasioned by "tubal mole" the salpingitis is much less marked and the closure is incomplete. The tube becomes thickened and more vascular, and at the fimbriated end the ring where peritoneum ceases and mucous membrane begins is subject to a slow contraction, which tends to partially confine the blood which is effused within the lumen of the tube. The consequent enlargement and dilatation of the tube on the uterine side of this ring of contraction withdraws some of the fimbriae back within the tube, but the process rarely proceeds further than this in "tubal mole." The abdominal ostium still remains patent though contracted, and is still marked by a small rosette of fimbriae on its abdominal

aspect. The external or peritoneal aspect of the tube is marked by a globular swelling corresponding to the situation of the "mole." Apart from this the changes which occur in the tube—in size, shape, position, and mobility—are very much the same as in other cases of tubal enlargement. As a rule, and especially when the pregnancy is situated near the fimbriated end, the enlarged and heavier portion of the tube containing the "mole" falls directly behind the uterus, rotating somewhat as it does so, and therefore dragging over it and its corresponding ovary the free portion of the broad ligament to which it is attached (mesosalpinx). This takes place very early in the course of the complaint, before any bleeding occurs or inflammatory adhesions form. Almost immediately afterward, however, as we have already seen, bleeding begins both into the tube and from the abdominal ostium; inflammation follows, and the tube becomes increasingly distended and adherent. The tumor, which was originally small, strictly posterior in position, moderately mobile and well defined, slowly extends to one side or the other, and instead of the small, well-defined tumor, limited to the site of pregnancy, we have a complex mass consisting of tube, ovary, broad ligament, and blood clot, which tends to fill one side of the pelvis and finally displaces the uterus to the opposite side, pushing the opposite tube and ovary close up against the pelvic wall. The uterus itself is enlarged, a decidua has formed within it, and its consequent increase in bulk tends to accentuate the displacement.

Intraperitoneal hematocele is a pathological product concerning which much has been learned during recent years. In women it is almost always caused by tubal pregnancy, sometimes by rupture of the tube, and sometimes by bleeding from the fimbriated end of the tube without rupture. The latter is the more common cause of intraperitoneal hematocele, and this bleeding from the unruptured tube is usually set up by the presence of a "hemorrhagic mole" within it. Cases of "tubal mole" with intraperitoneal bleeding from the open abdominal ostium probably outnumber the cases of tubal pregnancy with rupture of the tube; the hemorrhage, though almost continuous or frequently repeated, is moderate in amount, and a well-defined hematocele is the invariable sequel. On the other hand, cases of ruptured tubal pregnancy only sometimes give rise to a definite hematocele. In fully half the number of cases the resulting hemorrhage is "diffuse." No time or opportunity is afforded for the formation of a definite blood tumor, but the hemorrhage continues until stopped by operation or death. In the remaining cases where a hematocele follows the latter is often very unstable and subject to sudden and violent alterations from fresh bleeding, so that the tumor may be said to occupy a position midway between intraperitoneal hematocele and diffuse hemorrhage.

Occasional exceptions to the rule thus formulated are known. These exceptional cases, however, do not interfere with the general truth of the statement that rupture of the tube is

specially liable to be followed by diffuse bleeding, while hemorrhage from an unruptured tube containing a "mole" of pregnancy is essentially the most common cause of intraperitoneal hematocele.

The formation of the hematocele is a process full of interest. Much of this has been already described when treating of the tumor formed by the "tubal mole." But when the bleeding has reached beyond the limits of the tube and ovary and uterus, when it invades the abdomen from the pelvis, how is it limited and what is the process by which a more or less amorphous mass of blood clot becomes welded or shaped into a definite tumor? It must be remembered that the living abdomen is always full. Consequently, when any blood is effused into the pelvis it is in contact with the pelvic viscera—at first with the tube, the ovary, and the turned-in fold of the broad ligament; later, omentum and intestine come into contact with the growing blood clot, local peritonitis is set up by the hemorrhage, the pelvic and abdominal viscera become adherent to the surface of the blood clot, and the latter is bounded everywhere by "peripheral adhesions" to surrounding organs. The intraperitoneal hematocele is temporarily formed. But another process is going on beside this. The outer layer of the blood clot consolidates into a more or less perfect sac, and in addition to the adhesions the blood becomes encapsulated by a limiting layer or outer coat derived from its own substance or tissue. Sometimes the hemorrhage within this capsule ceases altogether. In process of time the adherent viscera become detached, and we may find a perfect sac remaining closely fitting round the abdominal mouth of the Fallopian tube, blood being found within it. This is known as encapsulated hematocele. But it is only rarely that the hemorrhage ceases on the immediate formation of the hematocele. In nearly all cases of tubal pregnancy with hematocele the bleeding is recurrent. The source of the bleeding is the tube, and this is necessarily now in the centre of the hematocele. The outer covering of the latter is stretched and distended; somewhere it "gives" to the strain, fresh blood and blood clot are forced through the rent or bulge through the weakened capsule into the abdomen, fresh local peritonitis occurs, fresh adhesions form, the rent is patched up, and the hematocele (greatly increased in size) again goes on.

In operating on a hematocele which has been formed in this way by several recurrent bleedings from the fimbriated end of an unruptured tube, what sort of a specimen do we remove? The recent blood and blood clot at the site of the last abdominal bleeding—the weakest part of the hematocele—are involuntarily broken down by the hand on touching the tumor. This and the central part or contents of the hematocele are washed or scooped away, parts of the outer wall are broken off and left adhering to intestine or omentum, and when the Fallopian tube, together with the remainder of the sac, is ligatured and removed, we find the outer shell of the hematocele forming

a curious, ragged extension of the tube; and if we view the tattered remnants of the capsule from within, we may usually observe some fimbriæ of the tube at one point on the inner wall. This marks the aperture of entrance from the tube into the hematocele.

Sometimes the whole of the pouch of Douglas is occupied by the hematocele. When this is the case there is, as a rule, no prominent tumor in the abdomen, but an irregular thickening, stretching across the lower part of the abdomen above the pubes, which marks the upper limit of the blood effusion. The prominence and distension of the hematocele, caused either directly by the hemorrhage or secondarily by inflammatory effusion below its upper limit, is entirely expended on the pouch of Douglas. This enlarges in every direction and encroaches on the vagina and rectum until the typical tumor is formed which is characteristic of full distension of the pouch when its upper connection with the general peritoneal cavity is temporarily occluded. Some writers describe this as the common or usual result of intraperitoneal bleeding. In my own experience it is quite exceptional. Whenever it does occur the difference of tension between the distended pouch of Douglas and the upper abdomen proclaims the fact that the lowest part of the peritoneum is entirely shut off by adhesions from the rest of the cavity, and because of this the condition can be treated as a purely local affection.

Later Rupture of the Pregnant Tube.—This may take place at any time from the first month onward, but is most common from the second to the fourth month. If the pregnancy is situated in the middle or outer portion of the tube, and especially if in its growth it opens up to some extent the two layers of the mesosalpinx, the pregnancy may continue to develop for some weeks before rupture or extrusion occurs. When rupture does take place, although the accident may be fatal (and usually is so without operation), the hemorrhage is probably never so directly and immediately fatal ("fatal without warning") as in the cases of very early rupture when the pregnancy is situated at the uterine end of the tube. It is even possible for hemorrhage to be altogether absent. The reason for this variable amount of hemorrhage is to be mainly sought for in the involvement or escape of the placental attachment. The tube, subject to slowly increasing pressure from within, becomes stretched and thin. As it enlarges and opens up the layers of the mesosalpinx, space is gained in which a pregnancy may develop for some weeks without material difficulty. This space is further protected by the bony pelvis on the side where the pregnancy is situated, and on the opposite side the displaced uterus forms a strong support or boundary. But the time comes, and usually about the third month, when this space is altogether insufficient for the growing tumor. Then either the peritoneum must be still further displaced and the pregnancy must burrow downward into the cellular tissue beneath it, or the covering of the pregnancy gets thinner

and thinner and the pregnancy moves upward until in some places there is probably nothing but the one layer of peritoneum between it and the abdominal cavity. Then with further growth not only is rupture inevitable, but some extrusion of the pregnancy into the abdomen—either partial or complete—is a necessary consequence also. If the placenta be exposed, separated, or torn, the bleeding will be severe; if, on the contrary, the placenta is not involved by the rupture, any hemorrhage will come from the separated tube alone, and this may be moderate, infinitesimal, or wanting. Even if placental the bleeding is only rarely directly and immediately fatal. As the blood pressure falls the hemorrhage ceases—at all events for a time—and a more or less well-marked attack of local peritonitis immediately follows. This peritonitis is neither so violent and dangerous nor so protective (by the formation of firm adhesions) as is the peritonitis set up by suppurative inflammation, but it is sufficient to form a kind of roof or cap of adhering omentum and intestine which covers and confines the hemorrhage and blood clot. In this way a distinct but unstable intraperitoneal hematocele is formed. Fresh hemorrhages occur sooner or later, owing to the increasing detachment and protrusion of the placenta which so frequently follows the rupture, or the pregnancy may continue to grow. In either case the hematocele increases in size, its upper limit becomes convex and tense from the augmented contents, and every few days or every day some fresh strain is placed on the boundary of the hematocele. This, which was never marked by any solidity or strength, finally gives way and a fresh invasion of the general peritoneal cavity takes place. Under these circumstances diffuse hemorrhage into the peritoneum may occur and be as marked as in the case of acute bleeding from early rupture, but is more frequently followed by another arrest and further repair. Whether this happens or not, however, it is not now so much the rupture of the tube which is the seat of danger as the separation of the placenta and the rupture of the hematocele.

From this description it will be evident that the hematocele caused by later rupture of the tube—when fully formed—is essentially similar, save in extent and severity, to that already described as occasioned by “tubal mole.” There are, however, some points of difference which almost necessitate the separate consideration given to the hematocele of “tubal mole” and to that of later tubal pregnancy with rupture. The hemorrhage in “tubal mole” is of quite a different character from that which occurs in late rupture of the tube. In “tubal mole” it is a more or less continuous blood-drip from the fimbriated end of the tube, varied perhaps by an occasional little gush of freer bleeding at irregular intervals. In later rupture of the tube the hemorrhage is sudden and relatively copious, arising, as we have seen, either directly from the tear in the tube or from separation of the placenta or from both combined. In “tubal mole,” owing to the slower formation of the blood

tumor, the outer layer of blood has time to consolidate, and some measure of true encapsulation, however imperfect, is usually met with. In later rupture of the tube, on the contrary, any encapsulation is quite exceptional, and the hematocele is limited only by the inflammatory adhesions caused by the peritonitis which follows the hemorrhage. Finally, the whole condition in later rupture of the tube is more "acute." The hematocele is larger at its onset and rapidly increases in size. It may often be visibly watched enlarging and distending as fresh bleeding takes place beneath the thin limiting adhesions, and it is then accompanied by signs and symptoms proportionate to the severity of the condition.

Tubo-abdominal Pregnancy.—When a fetus which has been already formed within the Fallopian tube escapes from the tube, enclosed in its *unruptured membranes*, into the abdomen of the mother, the pregnancy becomes "abdominal" or "ventral." If the placenta retains its attachment to the tube and receives sufficient blood supply from the maternal blood vessels, the pregnancy may pursue an uninterrupted course to term and both child and placenta attain mature development within the peritoneal cavity of the mother. The protection of the *unruptured amnion*, however, appears to be absolutely indispensable for this development. The difficulty in believing this lies in the fact that in most of the recorded cases the child has been described as lying naked and uncovered within the peritoneal cavity of the mother. Our leading authorities have argued, and probably argued rightly, that no fetus at any early age could be so exposed to the peritoneal cavity and its secretion and yet survive. They have accordingly sought for some method of explaining how the facts established by observation—the intra-abdominal position of the child—could possibly arise. The theory advanced is that every extrauterine pregnancy which has survived the primary rupture of the tube and has continued its development has done so beneath the peritoneum, sheltered within the folds of the broad ligament; that here it has remained until the seventh or eighth month, and then a secondary rupture of the broad-ligament cyst has taken place and the child has escaped among the intestines, "its tissues having arrived at a period of development by that time which enabled them to resist the efforts of digestion which doubtless would be directed toward them."

Although those of us who had operated on cases of abdominal pregnancy at full term felt that this theory was far-fetched and mistaken, for no broad-ligament pouch from which the infant had escaped could then be found, and although the theory was more or less disproved by isolated cases of abdominal pregnancy reported, we could not be said to have any good explanation of the mystery to offer until a case operated at the Spark Hill Hospital for Women on December 11, 1896, brought further light and explained how the child could inhabit the peritoneal cavity of the mother and still survive. On careful examination of the abdominal cavity in this

case it was found that a transparent membrane (the amniotic sac) surrounded the fetus and protected it in every direction, and that this was invisible on the surface of the intestine, but could be demonstrated as a film passing from coil to coil and completing the sac in which the pregnancy had developed.

The importance of the case in the present state of our knowledge cannot be overestimated. It effectually disposes of much of the theory now current on the subject of advanced extra-uterine gestation.

The essentials of the pregnancy are the fixed placenta, growing mainly or entirely from the tube to which it was originally attached, and the child enclosed simply in its amniotic sac, moving so far as the delicate sac permits it within the abdomen of the mother. The amniotic sac may be in some places separable from both mother and child; in other parts it may be quite inseparable from the peritoneal covering of the abdominal viscera within the maternal abdomen. The condition is produced in the most simple manner. The pregnancy begins within the tube and grows there until it can grow no longer. Then by rupture, or by some slow separation of the tube equivalent to rupture, the tube is opened up. The child within its amniotic sac escapes upward into the abdomen, the placenta remains attached to the inner surface of the tube, and from this, spread out and flattened by the rupture, the placenta continues to grow.

There are two other conditions under which the placenta may be found in advanced abdominal pregnancy. In the first the tube, although excessively expanded, may retain its individuality and the placenta be found still lying within it.

Finally, the abdominal position of the fetus may be associated with an intraligamentary placenta—a possible, though a very rare, occurrence.

There are accordingly four different relations of the placenta to the main gestation sac in abdominal pregnancy which need some differentiation. In the first group of cases the placenta is practically within the main gestation sac and covered by reflexions of the amnion. In the second it has a fetal and maternal surface of nearly equal dimensions as in normal pregnancy, the fetal surface being covered by the amnion and in immediate relation to the sac, while the maternal surface is growing from the spread-out remnants of the tube and from the peritubal tissues also, the back of the uterus, the broad ligament, and the pelvic wall being favorite sites for such extensions of attachment. In the third the placenta remains within the tube, the tube is still recognizable, and the maternal attachments are confined to the tube itself. In this case there may be a double gestation sac, the one containing the fetus, the other the placenta. In the fourth the placenta is attached to the upper wall of a broad-ligament sac outside the peritoneum, and the cord passes to the child through a hole in the ligament.

The sac in abdominal pregnancy evidently varies greatly in appearance and consistence. In many of the recorded cases it

can hardly have consisted of anything more than the amniotic membrane. This has become attached to the peritoneum, its epithelial lining becoming destroyed and its subepithelial layer becoming dense and fibrous. In other situations the subepithelial layer has been unaffected and the membrane is directly attached to the intestine or the abdominal viscera, is indistinguishable by sight from the proper peritoneal surface of such viscera, and only visible when reflected from one viscus to another, as already described. The membranes are not, however, necessarily adherent in this way; sometimes they have a completely independent existence, and probably all degrees are possible of partial peritoneal attachment. Sometimes their consistence and independence are such that they have been described as being extirpated or sutured at the operation for removal of the pregnancy. Cases so described are, however, sometimes open to the suspicion that an unrecognized broad-ligament pregnancy has been mistaken for abdominal. In true tubo-abdominal pregnancy the sac, consisting at the best of amnion and chorion, and often perhaps of an amniotic layer only, must, if independent, always be extremely thin and easily broken. If completely independent it may admit of removal with the child, but it is extremely doubtful if it could ever possess sufficient independence and consistence to admit of any independent suture.

The extrauterine placenta at term is an object of considerable interest. Throughout the whole course of the pregnancy the placenta has marked the site of the original and main attachment of the pregnancy, and in its attachment has held, and still holds throughout, the key to much of its pathology and treatment. When the infant has arrived at term the placenta has also reached its fullest development, and, so far as my experience goes, the extrauterine placenta at term, though often deformed in shape, keeps close to the normal standard both in size and weight. The method by which it has attained this development outside of the uterus may well demand our attention. Sutton states: "The fully developed uterine placenta is composed of parts derived from the maternal and fetal tissues in nearly equal parts; a tubal placenta is mainly if not entirely derived from the fetal tissues." It is true that there is no clear evidence of a tubal decidua, but the placenta, as it increases in size (like a new growth in its progress), absorbs, takes up, and metamorphoses into its own tissue that of the Fallopian tube in which it was originally enclosed, and possibly the ovary of the same side also. In a considerable number of cases it is reported that neither ovary nor tube could be identified on the side of the pregnancy. So completely is this done that all traces of the tube may be lost at term or only the fimbriated end be found, as in the case I have described. When by the reflexion of the amnion this invasion of the placenta is limited to the tube and broad ligament only, the matter is solely one of pathological importance; when there is no such limitation the consequences may be serious.

2. *Tubo-ligamentary Pregnancy*.—A growing pregnancy

situated in the middle of the Fallopian tube, as it expands the tube, instead of thinning and bursting the upper part of the tube, may separate the layers of the mesosalpinx. The space between these layers, which in the normal state is non-existent or represented by the merest line, becomes under these conditions a space of considerable extent. An increasing amount of the circumference of the tube is accordingly separated from its peritoneal covering and exposed to loose connective tissue only. As the tube expands still further it is only reasonable that it should occasionally give way in this direction and that the fetus should be extruded into the connective-tissue space below the peritoneum. This is, indeed, exactly what happens in "broad-ligament pregnancy." The rupture of the tube and extrusion of the pregnancy into the broad ligament is usually accompanied by considerable hemorrhage, which still further distends the space beneath the peritoneum and between its layers. An extraperitoneal hematocele or broad-ligament hematoma is the result, and in some cases the pressure and disturbance caused by this is sufficient to stop the progress of the misplaced pregnancy. When this is the case the hemorrhage is slowly absorbed, and if the pregnancy be early and abortive it undergoes absorption also.

Broad-ligament hematoma is of rather frequent occurrence as a sequel to any operation involving ligature of the broad ligament, and the hematoma is apt to occur at the first menstrual period subsequent to the operation. Every surgeon who practises operative gynecology must accordingly be well acquainted with its leading features. It arises suddenly as a tumor or infiltration on one side of the uterus, it roofs the lateral vaginal fornix with a boggy or hard immovable cement of blood clot, and gradually extends upward toward the groin of the affected side at Poupert's ligament. Sometimes its prolongations below are ill defined and difficult to trace; at other times the tumor is defined and its border is abrupt. When the hemorrhage is extensive and on the left side it may encircle and block the rectum. At other times, by burrowing in front of the rectum low down in the pouch of Douglas, it may produce a well-defined tumor behind the uterus that closely simulates the intraperitoneal swelling of a distended and adherent tube. It always causes considerable pain and is frequently accompanied by transient fever. Broad-ligament hematoma is often confounded with cellulitis and the differential diagnosis is sometimes very difficult. The bare physical signs in both conditions may be identical. Besides being a rather frequent operation sequel, hematoma of the broad ligament is occasionally met with after labor and abortion and in connection with menstrual irregularity and arrest when no pregnancy exists. Other cases are due to the intraligamentary rupture of a tubal pregnancy, as already explained, but these are by no means so frequent as some writers would lead us to suppose. In this respect extraperitoneal hematocele (broad-ligament hematoma) may be said to contrast with intraperitoneal hematocele. Intraperitoneal hematocele in women is almost always

due to tubal pregnancy; hematoma of the broad ligament, on the other hand, is only in the minority of cases due to this condition. When the pregnant tube ruptures into the broad ligament the hemorrhage may be limited or small in amount and the placental attachment may be undisturbed. If so, the tube retains its relation and attachment to the placenta, while the fetus (instead of escaping upward as in abdominal pregnancy) escapes downward between the layers of the broad ligament and undergoes its further development beneath the peritoneum.

These cases of broad-ligament pregnancy with secondary rupture are always serious. Before operation they cannot be differentiated from the cases of later rupture of the tube already considered, but at operation in the more common tubo-abdominal rupture the hemorrhage can be at once arrested by ligature of the broad ligament and removal of the tube. In the broad-ligament pregnancy with secondary rupture the case is different—there is nothing definite to tie unless one ligates special vessels, the operation takes longer, the surgeon has to trust to pressure and drainage, and the final result is correspondingly less satisfactory and certain.

The tubo-ligamentary or broad-ligament pregnancy may go on to term, and in its full development and during the stages by which it reaches that development it differs very materially from the tubo abdominal or ventral pregnancy and will need further consideration from almost every standpoint. In tubo-abdominal pregnancy, if the patient survive the fourth month and the dangers incident to the extrusion of the fetus from the tube, she is free from further dangerous complications until the term of pregnancy is near its completion. In the tubo-ligamentary, on the other hand, owing to the higher position of the placenta and its liability to detachment from the growth of the pregnancy, the patient is never free from danger, and, although many cases of this kind go on to term, secondary rupture and fatal hemorrhage are by no means uncommon or impossible at almost any stage of the development. In both varieties the period of the third or fourth month is a specially dangerous one, because up to this time the pregnancy has received the support and shelter of the pelvis. When the pregnancy rises out of the pelvis into the abdomen the protection afforded by this is lost, and in the broad-ligament form the gradual elevation of the placenta brings an additional source of danger.

Earlier or later in the history of most tubo-ligamentary pregnancies the tumor tends to invade or displace the layers of the broad ligament and the peritoneum continuous with these unequally. Sometimes it is the anterior fold of peritoneum which suffers the more displacement, and they are the cases which are at present more recognized and better understood. The peritoneum is raised from the back, side, and front of the uterus, it is entirely lifted away from the bladder, it is raised from the anterior and lateral abdominal wall, and in this way a good portion of the pregnancy comes to lie in front of the peritoneum. The pregnancy becomes in some places "subperito-

neal," according to common anatomical language, and may possibly be opened from the outside of the abdomen without the necessity of incising the peritoneum anywhere.

As we have already seen, tubo-abdominal or ventral pregnancy has quite another explanation, and is practically distinct from the tubo-ligamentary variety from the moment that the fetus is extruded from the tube. Now, a considerable body of evidence has formed which tends to show that this subperitoneo-abdominal pregnancy is not only quite distinct from ventral pregnancy, but represents only a part, and that perhaps the smaller part, of the cases of true broad-ligament pregnancy. For sometimes—and probably in the majority of cases—it is the posterior fold of peritoneum (and not the anterior) which undergoes the greater displacement, and then the condition found in advanced gestation is altogether different. The peritoneum is raised from the side and back of the uterus. It is raised from the pouch of Douglas and from the rectum, and lifted upward from the posterior pelvic wall as far as the sacral promontory. This appears to mark the usual limit of displacement, and the peritoneum thus raised appears to be sufficient to satisfy the requirements of the growing pregnancy to term. The anterior peritoneum is quite undisturbed. On opening the abdomen at or beyond the full period of gestation the pregnancy is seen to be everywhere covered by peritoneum, much as the uterus is in normal pregnancy, and it is not until the hand is passed behind the sac of pregnancy that one realizes that the base of it fills the pelvis on the side from which it is springing, and that the peritoneum is reflected from above the pelvis directly on to the body of the pseudo-uterus. The real uterus is found beneath the sac of pregnancy and pushed to the opposite side. This condition has been recognized for some years as occasionally met with by the surgeon when operating for the removal of an extrauterine pregnancy at term, but the explanation of the method of its production was until quite recently imperfect or wanting.

Advanced tubo-ligamentary pregnancy must, then, be divided into two subdivisions or classes: (1) the anterior ligamentary, subperitoneo-pelvic or subperitoneo abdominal pregnancy, and (2) the posterior ligamentary or retroperitoneal pregnancy. The first is established by postmortem proof and frozen sections, and does not admit of any doubt or question. The second rests mainly on operative evidence, but that evidence is confirmed by more than one operator.

There are two points worthy of further notice in the progress of a tubo-ligamentary pregnancy toward "term." The one relates to the development of the sac, the other to the position and integrity of the child and placenta. In the earlier months space for the growing pregnancy is gained almost entirely by displacement of the peritoneum, and this may be continued more or less throughout the whole period of gestation. In the later months another process of accommodation takes place, and further space is obtained rather by development and

extension or dilatation of the sac already formed than by further invasion of subperitoneal tissues, so that at term, although the pregnancy is entirely outside the peritoneum, it is not much more so than when *in utero*. For it must be remarked that every normal intrauterine pregnancy is, from the anatomical standpoint, entirely subperitoneal throughout, and yet the distended uterus forms an intraperitoneal tumor. Similarly, although the base of the broad-ligament pregnancy is entirely below the peritoneum, in most cases the upper part of the sac is intraperitoneal and forms a tumor of considerable size. This applies to both forms of tubo-ligamentary pregnancy, particularly to the posterior or retroperitoneal, where the sac of pregnancy forms a pseudo-uterus, which is almost entirely an intraperitoneal tumor. To a less extent it may be seen in the subperitoneo-abdominal form also.

With regard to the placenta, its position is inseparably bound up with the position of the Fallopian tube, and its final resting place is therefore also the final resting place of the tube. The original relative positions of the child and placenta are fixed at the time of invasion of the broad ligament or abdomen. In tubo-abdominal or ventral pregnancy the child is uppermost. In tubo-ligamentary or broad-ligament pregnancy the child is undermost, its relative position to the placenta being fixed by the relative position of the tube to which the placenta is attached. If the relative position alters during the course of the pregnancy, as it evidently does to a considerable extent in the later stages of the posterior ligamentary or retroperitoneal form of tubo-ligamentary pregnancy, it is because the sac develops posteriorly to the tube and therefore affords room for the child to pass behind the placenta and so to attain a higher position. Similarly, in the subperitoneo-abdominal form it may be quite possible for the child to pass in front of the placenta during the later stages of its growth. If the placenta occupy the highest part of the sac during the later stages of pregnancy, it affords evidence of extreme dislocation of the tube, and such a case is liable to hemorrhage and rupture, however far advanced the pregnancy may be. The placenta will suffer from local hemorrhage, and the pregnancy will be liable to terminate disastrously before the full period of development. In those cases which go to "term" the placenta is usually fully equal to the nutrition of the child, and though much has been written on the faults and lesions of the extra-uterine placenta as responsible for failures and defects of the extrauterine fetus, I cannot say that the relationship appears to me to be by any means established. So far as my own experience goes, the extrauterine child at term, in size and weight and general nutrition, is in no way behind the average. But the child is often locally defective or malformed, such defects or malformations almost invariably corresponding to some long-continued pressure exerted by the bony skeleton of the mother on the extrauterine fetus. These malformations are most commonly met with in children of abdominal or ventral pregnancies. The children of ligamentary pregnancies,

and particularly those of the posterior variety, may be free from any visible defect whatever.

3. *Tubo uterine Pregnancy*.—Tubo-uterine or interstitial pregnancy is a rare condition. Strictly speaking, this pregnancy is not really extrauterine, or only becomes so by rupture into the abdomen, but the pregnancy is “ectopic,” outside the uterine cavity, and it is the most dangerous of all the forms of ectopic gestation. In most of the specimens of this accident it appears to be the tissue on one side of the fundus which is mainly invaded by the growing pregnancy. The obstruction to the passage of the impregnated ovum, and its primary attachment, is probably exactly at the uterine ostium of the tube. This refuses to admit the passage of the “oö-sperm,” the ostium is pushed before the growing ovum as it increases in size, and a burrow is formed into the uterine tissue (above or to one side of the cavity of the uterus) where the pregnancy finds a temporary resting place and bed. This naturally raises the height of the uterus on the side affected, and in all the specimens I have seen the asymmetry produced by this has been very noticeable, the Fallopian tube of the non-affected side appearing to enter the uterus at a lower level between the (altered) fundus and cavity. This asymmetry may be simulated by pregnancy in one part of a double uterus or by cornual pregnancy in a bicorned uterus, and, indeed, several supposed specimens of interstitial pregnancy have been found on close examination to be of this nature. In both of these conditions, however, there is always some angle, more or less well marked, where the double organs join, and this is, of course, absent in a tubo-uterine pregnancy.

A tubo uterine pregnancy may continue to grow for several weeks to the end of the fourth month or even longer, between uterine peritoneum on the one hand and uterine mucous membrane on the other. Sooner or later rupture takes place, either downward into the cavity of the uterus or upward into the abdomen. The former method of rupture is a highly probable occurrence, and if it occurred would presumably be followed by spontaneous healing of the wounded tissue and normal delivery at term; but in spite of the slenderness of the bridge of tissue usually existing between the sac of the pregnancy and the cavity of the uterus, we have no positive demonstration that this has ever taken place alone. The only rupture that is known to occur is rupture into the abdomen (or into the abdomen and uterus simultaneously), and the result of this is always appalling. Diffuse hemorrhage, worse (if possible) than that which takes place with early rupture of the tube, is the main feature of the pregnancy, and hitherto this has always proved fatal in a very few hours.

In some of the older statistics of extrauterine pregnancy cases of “interstitial” pregnancy figure largely and in far higher proportion than in any statistics obtained from later experience. These numbers must almost necessarily be largely mistaken, since any recent specimen is only of rare occurrence, and it is highly probable that some tubo-ligamentary and

cornual pregnancies have been included by mistake. When a specimen is difficult to place, the position of the round ligament with regard to the pregnancy is sometimes of service in deciding its true character. This should be on the uterine side of a tubal or tubo-ligamentary pregnancy, while it should be on the other side or in the anterior wall of an interstitial or cornual pregnancy. The position of the round ligament as a guide to the differentiation of cornual pregnancy was first pointed out by Virchow.

DISEASES OF CHILDREN.

Acute Yellow Atrophy of the Liver in a Child of Two and one-quarter Years.—Starck¹ reports the case, which began with vomiting, diarrhea, and icterus. These symptoms persisted, with fever and increasing prostration. Liver not diminished in size. Suddenly, one day before death, restlessness began and gave place to coma during the night. The child died without recovering consciousness. At the autopsy the liver was found large, hard, and very yellow. Microscopically the liver cells were seen to be almost entirely degenerated and the connective tissue somewhat increased. It was evident that death had occurred before the liver had time to grow smaller, as it usually does in this disease. The etiology remained obscure, although it is possible that the cause was furnished by the gastro-intestinal tract in the form of an inorganic poison.

Appendicitis in Children.—Irving S. Haynes,² in what he calls a clinical paper, gives the account of 6 cases. He says, that, considering the prominent constitutional symptoms of disease, temperature and the pulse, we see that appendicitis is a disease of very low temperature and pulse rate. The temperature and pulse do not reflect the serious nature of the inflammation until perforation of the appendix is imminent or has already taken place. There are, in fact, no one or two symptoms which can be decided upon as pathognomonic. The symptoms which are most useful in determining the state of the inflamed appendix, and especially those which point to an early rupture of the tube, are these: there will be abdominal tenderness, usually not extending beyond the median line, with its most sensitive area over the appendix; there will be found reflex muscular rigidity of the right abdominal muscles, this reflex contraction becoming more marked as you approach the right iliac region. If you can press the abdominal wall backward sufficiently far you may detect a tender mass, oblong in shape, in the region of the appendix, which is usually that organ. But do not hurt or alarm the child, nor press so hard as to rupture a thinned and distended organ.

Before perforation the temperature may range from 99° to 101° F. and the pulse from 100 to 110; but as soon as perforation has taken place, although the temperature may only show a rise to 102° or 103°, the pulse jumps up to 140° or 160°. So in a case of tender abdomen, rigid right rectus and abdominal muscles, severe pain on pressure over McBurney's point, with or without a tumor, with a temperature not far from 100°, but

with a pulse relatively constant to it at about 110° , although it may be full and bounding, you may be sure that rupture has not yet taken place but is very near at hand, and an early operation is demanded. The author describes the operation in detail, and adds: In case the patient is *in extremis* and haste must be made, do not bother with refinements. Cut quickly into the abdominal cavity, flush it out, ligate and cut off the appendix, turn in the peroxide of hydrogen, and irrigate again. Insert the drain, placing the gauze about the stump of the appendix. Close the abdominal wound with silkworm sutures through everything. If the patient lives and a hernia results, you can repair the abdominal wall at some future time. Life is at stake, and Death will win unless you can defeat him by fast work and removal of the infection.

Bacillus Diphtheriæ and its Variants.—F. F. Westbrook,³ L. B. Wilson,³ O. McDaniel,³ and J. H. Adair³ have written an exhaustive article upon this subject. The term “atypical” which the authors employ indicates that the bacillus, though exhibiting well marked morphological and a few cultural characteristics which are very unlike those usually described by others and classed in this article as “typical” forms of bacillus diphtheriæ, is merely a variety of bacillus diphtheriæ. From the comparatively few cases of illness accompanied by throat symptoms from which these atypical forms, unmixed with typical diphtheria bacilli, were found, it would appear that these atypical bacilli—allowing that they are causative—produced a milder infection than some of the cases in which typical forms were found. It was found that the atypical forms may remain in the human throat for months without producing any symptoms, or, on the other hand, may produce clinical symptoms not to be differentiated from diphtheria, which, however, is usually of a milder type than when typical forms were present.

Blood-letting, Local and General, in Pediatrics.—Baginsky⁴ has employed venesection in 3 cases of pneumonia, which he reports in detail. The children were 7, $7\frac{1}{2}$, and 9 years old respectively, and 80 to 100 cubic centimetres of blood were taken away. The dyspnea, cyanosis, and restlessness showed a marked, immediate improvement, and all three patients recovered. On the other hand, 2 cases were not benefited by the treatment, being pneumonia in young infants, and proving fatal. The method must be looked upon as a purely mechanical one, its good effects due to the mechanical relief of the overcharged heart, and the fatal cases due to a lack of reserve strength sufficient to overcome other than the mechanical factors—that is, the intoxication. As for local blood-letting by means of leeches, there are two conditions in which it is indicated, and in which it may prove useful when all other methods have failed—namely, simple convulsions and uremia. In one case of uremic convulsions six leeches were applied to the head with excellent results.

Broncho-pneumonia.—Samuel West⁵ has an article demonstrating that pneumococcal pneumonia in a child takes the

lobular and not the lobar form. From the study of a number of cases the following conclusions are reached: 1. That the primary and secondary broncho-pneumonias have a different bacteriological origin. 2. That secondary broncho-pneumonia is for the most part due to streptococcus infection derived from some source in connection with the air tubes, throat, and mouth. 3. That primary broncho-pneumonia is of pneumococcal origin. 4. That pneumococcus inflammation occurs with almost equal frequency in the child and the adult. 5. That pneumococcal inflammation takes a different form in each, in the adult producing massive consolidation and in the child disseminated patches of consolidation; in other words, that there are no real pathogenic distinctions between lobar pneumonia of the adult and primary lobular pneumonia of the child. The difference in the form of inflammation in the adult from that in the child depends, in all probability, upon the peculiarities of the child's lung, such as elastic chest walls, diaphragmatic rather than costal breathing, relatively longer trachea and bronchial tubes, smaller air cells, more abundant interstitial tissue, larger epithelial lining of the small bronchi and alveoli and their more rapid response to irritation. The author believes that the term "broncho-pneumonia" would best be reserved for those inflammations of the lungs which follow antecedent affections of the bronchi, and that their exciting cause, for the most part, will be found to be other organisms than the pneumococcus, while, on the other hand, the primary broncho pneumonia of children is really croupous pneumonia occurring in a disseminated and patchy form instead of a massive consolidation.

Broncho- pneumonia, lobular, patchy, or disseminat- ed.	1. Gradual onset, tendency to relapse. Fever, hectic, markedly intermittent, of long duration, with gradual fall.	Streptococcus chiefly, and others.	Secondary broncho- pneumonia after mea- sles bron- chitis, whooping cough, diph- theria, etc.
	2. Gradual onset, with sudden aggravation. In other respects same as above.	Streptococcus, etc., associated probably with pneumococcus	
	3. Sudden onset; no tendency to relapse. Fever high, not markedly intermittent of short duration, with sudden fall.	Pneumococcus—primary broncho-pneumonia.	Croupous pneumonia.
Croupous pneumonia, lobar, mas- sive consoli- dation.	Similar in all respects to the last.	Pneumococcus.	

Cerebro-spinal Meningitis, Epidemic.—W. T. Councilman⁶ presents an extensive and complete article upon this subject. But little, he states, is known about the transmission of the disease. The cases are rare in which it seems to have been directly transmitted from one individual to another. In most epidemics the cases have been scattered, though there are a few accounts in which the same family has been attacked, and in a few instances the disease seems to have been transmitted by the use of infected clothing. Bacteriological study has tended to show that the disease is undoubtedly an infectious one and is produced by a definite micro-organism, the *diplococcus intracellularis*. The author has found but one report in which this organism was found in a typical sporadic case. The surest method of diagnosis in meningitis, and one which should always be carried out when possible, is by lumbar puncture. If properly carried out in the early stages, which is the time when there is the most difficulty, it is almost conclusive.

Chronic Intestinal Indigestion.—In the course of an extended article upon this subject, S. Henry Dessau⁷ states that for children suffering from this complaint all starchy foods, except in the most limited quantity, should be forbidden, unless one of the amylolytic ferments, as diastase or takadiastase, is previously added. Coffee and tea are to be condemned, also fats and sugars except in the smallest amount. Meat will be found to agree better for a while until the digestive functions are restored, but it should be eaten in a solid form, not as soup or extracts. Hydriatics in the form of warm wet packs, followed by a cold sponge douche of 60° F. to the spinal column and abdomen, with brisk friction, are admirably indicated to promote oxidation of tissue and elimination of waste matter. Cold wet compresses to the abdomen, followed by massage along the line of the colon, will be found a valuable aid in constipation of infants. Rectal irrigation with Kemp's tube and water at 110° F. is a most efficient means of relieving the attacks of abdominal pain. In infants the principal indication for the use of drugs will be to relieve constipation and flatulence. For this purpose calomel and bismuth are the only drugs worth considering. As an intestinal antiseptic the bismuth may be given in the form of the subnitrate, subgallate, or beta-naphthol bismuth. After dentition the author prefers the use of a tonic laxative, such as cinchona and nux vomica with senna or cascara sagrada.

Constipation, Habitual, in Infancy.—Thomas S. Southworth,² in the course of a valuable paper upon this subject, says that constipation in most fairly nourished infants falls under one of a limited number of heads and yields readily to measures which are largely dietetic, provided one is willing to study the individual case and examine the stools. In entering upon the treatment of such a case the size and number of the stools must be carefully considered, but it is of the highest practical importance that the fecal masses themselves should

be inspected and dissolved and broken up by the physician, and in some cases, if practicable, subjected to chemical analysis, before we can be in a position to enter upon a line of intelligent medication. In the case of nursing infants there should be a chemical analysis of the breast milks, with especial inquiry into the percentage of the fat and total quantity of the milk. The amount of the mammary secretion may be increased by adding to the dietary of the mother more fluid food, cow's milk, cocoa, and thin gruels, especially that made from well-cooked corn-meal flour. The addition to the mother's meals of more eggs, meat, and broths, or the giving of one of the reliable extracts of malt, are the most efficient means of increasing the secretion of fat. Regurgitation of small quantities of milk, or vomiting after nursing, may serve to warn us that we have pushed the fat percentage of the milk beyond the digestive power of the infant. With a failing supply of milk and low total solids, attention to the diet of the mother and the administration of tonics will often re-establish the secretion. If the constipation be coincident with a stationary weight, supplementary feedings are indicated.

The commonest errors in diet leading to constipation are the giving of insufficient fat, or insufficient proteid, or of excessive proteid. This insufficiency or excess of proteid may depend solely upon an excessive or insufficient dilution with water. Thus we find that the child is receiving a food containing (a) proper proportion of total solids but given in insufficient quantity; (b) excessive or improper proportions of total solids in too concentrated a form; (c) proper amount of total solids in too concentrated a form; (d) insufficient amount of total solids, excessively diluted. It is extremely rare to find a child who is artificially fed whose constipation cannot be remedied by intelligent modification of its diet. In beginning the treatment of a case of habitual constipation, it is usually advisable that the intestinal tract should be gently but thoroughly evacuated, in order that the obstruction offered by the accumulated and hardened masses may be eliminated. Calomel in divided doses is to be preferred for this purpose. Drugs are rarely as valuable as a careful study into and removal of the essential cause of the constipation. Tablets of rhubarb and soda with peppermint are sometimes useful in mild cases, or the fluid extract of cascara. Fluid preparations of malt are often good, and cod-liver oil is peculiarly serviceable in cases dependent upon poor nutrition in which the addition of fat is indicated. Enemata may be employed for comparatively short periods, but should not be abused. Cold injections excite more extended peristaltic action than warm, and a saline solution is less irritating to the mucosa than plain water. When medicated suppositories are necessary they should be made with cocoa butter and the proportions of the ingredients controlled by the physician's prescription. It is all important to regulate the intestinal functions in childhood, but we should endeavor to accomplish this by removing the cause through the employment of simple and

rational dietetic and hygienic measures, remembering that the abuse of enemata and purgatives will eventually diminish the sensibility of the mucous membrane and produce atony of the muscular coats of the intestine.

Convulsions.—C. F. Markel^{*} writes that one of the most important predisposing causes of convulsions is the existence of an unduly excitable nervous system in young children who have inherited this tendency from their parents. It may also be due to a low state of the vitality. A few of the exciting causes are: the process of teething, an overloaded stomach or some form of indigestible food, diarrhea, and worms. Whatever may be the exciting cause, experience shows us that there always exists a frequent pulse and a very high temperature prior to the attack. Notwithstanding the list of remedies, we constantly see cases which we are not able to control. It is in such cases that the author has found inhalations of chloroform very efficacious.

Creosoted Oil for the Expulsion of Tracheal False Membranes after Tracheotomy.—William Ewart^{*} recommends this remedy for the purpose of promoting the expectoration of the membrane, to assist its detachment, to lessen its infectiveness *in situ*, and to stimulate and soothe the ulcerated mucous surface. The first two indications are the most urgent, and in so far as it has succeeded in fulfilling them the method has contributed to the saving of life, since death, when it occurs, is due to the direct obstruction set up by the membrane or to its unchecked extension into the small tubes.

Deformity, Congenital.—König^{*} relates the case of a week-old baby with a number of congenital deformities—genu retrovatum, bent tibia, marked clubfoot, flexion of left hip, and constriction of left leg below the knee. Evidently intrauterine pressure caused all the lesions.

Diphtheria, Relation of the Status Lymphaticus to.—Daut¹ has paid especial attention to the presence of the status lymphaticus since 1894, and has found 23 cases among 79 deaths from diphtheria. This relatively high number would seem to prove that the lives of children so afflicted are very greatly endangered by an attack of diphtheria; and, further, it suggests the possibility of an increased predisposition to the diphtheria poison. The cases were all of the descending or else of the septic variety, and the severe cyanosis and air-hunger was found to be due, not to a densely plugged larynx, but to a very weak heart. Intubation, when practised in these cases, does not bring any relief, and the autopsy confirms the absence of a large membranous exudate, but the presence of the status lymphaticus, as evidenced by general lymphatic enlargements, including the spleen and the thymus, and possibly a mild rachitis. The histories of 27 cases are appended.

Dislocation of the Hip, Congenital.—Royal Whitman¹⁰ offers what he terms preliminary observations on the treatment of this disease by the Lorenz method of forcible correction, and reports a successful case, illustrated by photographs and

skiagrams. The treatment, he says, is based upon the theory that if parts about the joint may be sufficiently stretched to allow the head of the bone to be brought into direct contact with the rudimentary acetabulum, and if it can be held in this position, the weight of the body in walking, constantly forcing the bone against the substance that partly fills it, will gradually enlarge it to its normal capacity. Thus it is called the "functional weighting" method, and this is its essential and vital distinction from the forcible correction of Pâci, with which it is often confounded. The steps of the operation are: 1. *Elongation of the limb*.—The trochanter must be brought down to the level of Nélaton's line or lower. The child having been anesthetized, a folded sheet is passed between the legs and the two ends are held above the shoulder of the side to be operated on, or the assistant may clasp his hands about the perineum and thus fix the pelvis. One then seizes the thigh and begins a series of alternate stretchings and relaxations, using gradually increasing force for from ten to twenty minutes, or until the resistance of the tissues is entirely overcome. 2. *Reposition*.—One now attempts to force the head of the femur over the ridge that represents the posterior margin of the acetabulum and through the opening in the contracted capsule. The thigh is flexed to about ninety degrees to relax the capsule, then gradually and forcibly abducted under traction to a right angle with the body, or slightly beyond even, then rotated slightly inward so that the head of the bone may point toward the opening in the capsule, and while contraction is continued with one hand the other is pressed downward above the head of the displaced bone, and is then lifted and drawn over the obstacle formed by the rim of the acetabulum. If this is successfully accomplished one hears and feels a distinct sound and shock, and the leg remains fixed in an attitude of flexion and abduction. 3. *Acetabulum formation*.—One now attempts to enlarge the opening into the acetabular part of the capsule. While the head of the bone is forced against or through the opening, the thigh is forcibly rotated outward again and again and extended to its full limit, in order that the anterior wall of the capsule, which is drawn tightly across the depression, may be distended and the capacity of the new articulation increased. When the manipulation is completed the leg is fixed in the attitude of extreme abduction and extension by a firm spica plaster bandage extending to the knee. As soon as possible the child is encouraged to stand and to walk. The original position is maintained for two or three months, when it may be gradually reduced as the stability of the joint increases. The great advantage of the Lorenz method is that it can be applied as soon as the diagnosis is made, for, being free from danger and not necessitating a cutting operation or confinement to a hospital, the consent of parents is readily obtained. Another advantage is that the muscles become accommodated to the changed relations of the parts while the leg is fixed by the plaster bandage, so that the long-contin-

ued supervision and gymnastic training that are essential after the open operation may be dispensed with.

Endocarditis Cured.—Starck¹ cites the case of a little patient 11 years old who, during a second attack of rheumatism, developed an endocarditis involving the mitral valve. Treatment consisted of sodium salicylate internally and an ice bag to the heart. In six weeks the child was cured, the heart sounds and area being quite normal. Authentic cases of healed endocarditis following rheumatism are certainly not numerous.

External Rhinitis due to the Klebs-Löffler Bacillus Appearing in Children Convalescent from Scarlet Fever.—C. Todd¹¹ describes a certain form of external rhinitis which is very apt to attack children recovering from scarlet fever in hospital, and often accompanied by the formation of secondary pustules on various parts of the body. It appears first as a slight redness of the posterior margin of one or both nostrils, usually beginning at the inner or outer angle and at the mucocutaneous junction. The redness becomes more intense, and ultimately a moist, granular-looking raw surface results; this surface bleeds easily and is often covered by a crust which may almost or completely block up the nostril. There is never any formation of membrane, nor does the process seem to extend back into the nasal cavity, but in many cases it spreads down to the upper lip, apparently caused by the infective discharge. The rhinitis, though not membranous, is associated with the presence of the Klebs Löffler bacillus in the nostrils, this organism being absent from the fauces. It is contagious, but has not been observed to give rise to faucial or laryngeal diphtheria. It is unaccompanied by rise of temperature, albuminuria, or marked glandular enlargement. It appears to be limited to children under 13 years of age, and has been most frequently observed at the ages of 3 and 4 years. The fact that the bacillus, though present in the nostrils in large numbers and causing a local lesion, does not give rise to constitutional symptoms or to faucial or laryngeal diphtheria, suggests that its virulence is modified to a remarkable extent.

Foundlings in Russia, Care of.—J. L. Hildreth¹² gives an account of the methods at the Imperial Foundling Home of Moscow, which gives refuge annually to 17,000 infants abandoned by their mothers. Seven per cent of the nurslings die annually from pneumonia, due partly to defective ventilation of the rooms and partly to colds caught on the way to the institution. The entire annual mortality ranges from 20 to 43 per cent, gastro enteritis being accountable for 5 per cent and pyemia for 13. The mortality in cases of pyemia has diminished considerably since antiseptic bandages have been used on the umbilical sore; but a large number of infants arrive at the Home with symptoms of purulent infection already clearly noticeable. Of the total number brought to the hospital, 20 per cent are sick at the time of admission; 30 per cent are of weak constitution, weighing below the average (6.6 pounds); 5

per cent very weak; 4 per cent of premature birth (600 of these every year), and 8 per cent syphilitic. Of this number of ailing, delicate children, an annual average of 100 die at the hospital only a few hours after their admission. When once within the sheltering walls of the hospital there is little fault to be found with the treatment. Great care is exercised with regard to cleanliness; in summer the children are taken to barracks, where they get the benefit of fresh air to the utmost. Most of the nurslings are entrusted to the care of wet-nurses, who are usually girls from the suburbs or peasants from the adjacent governments.

Heart Disease, Congenital.—Hahn¹⁴ reports the case of a 4-weeks-old baby brought to him for attacks of dyspnea and cyanosis. The heart was enlarged and a presystolic basic murmur was heard. Death was due to pneumonia. At the autopsy the right auricle and ventricle were found hypertrophied, the left chambers very small. Foramen ovale was open, the ductus arteriosus almost closed, the arteries normal, but the pulmonary veins emptied into the dilated right auricle.

Infection with Pneumococci.—M. Ballay¹⁵ and A. Halipré¹⁶ state that children frequently suffer from infection with pneumococci. Among the clinical manifestations which result, those affecting the larynx are most interesting and important, and consist of tirage and attacks of suffocation. Sometimes there are false membranes upon the vocal cords, so that the expression *pneumococcus croup* is justified; in other cases the vocal cords are unaffected and there is no lesion of the larynx, the affection being probably a spasm of the glottis. The authors report two cases. One of them closely resembled diphtheria, but a bacteriological examination proved the true nature of the disease. Intubation was successfully performed, with good results. In the second case broncho-pneumonia was present. Intubation gave great and immediate relief, but the child died in spite of all efforts to save it. In such cases the authors recommend cold packs of the thorax, subcutaneous injections of caffein and artificial serum, and, in the event of otitis media, instillations of oxygenated waters in the external auditory canal.

Intestinal Tuberculosis.—N. Senn¹⁷ reviews the etiology, pathology, and diagnosis of this disease. It is a very common complication of pulmonary and miliary tuberculosis. It is not often met with as a primary affection, though clinical experience and many necropsies furnish substantial verification that the primary affection does occur. It is found that the virulence of the bacillus of tuberculosis is little if any impaired by the gastric juice on its way through the stomach. Tuberculosis of the stomach usually occurs only in connection with similar affections of the other organs, and is a very rare affection. Primary tuberculosis of the intestinal canal is the result of infection from without by the ingestion of food contaminated with the bacillus of tuberculosis, usually in the form of tubercular milk and meat. The secondary form is caused by auto-

infection by the entrance of tubercular sputa into the intestinal canal. The lymph follicles and Peyer's patches furnish the most favorable anatomical conditions for the localization and growth of the tubercle bacillus. Intestinal tuberculosis is found most frequently in children and young adults, although no age is entirely exempt. The disease in children results in early and extensive infection of the mesenteric glands, from which reinfection usually terminates life by miliary tuberculosis. Secondary tuberculosis appears to be more frequent in adults than in children. Intestinal tuberculosis pursues a more benign and chronic course in adults than in children, and consequently the primary form of intestinal tuberculosis amenable to successful surgical treatment is met with most frequently in young adults and persons of advanced age, seldom in infants and young children. The article concludes with a minute description of the pathology of the subject, with plates.

Intubation and Antitoxin.—Charles B. Stevens¹⁵ recommends the avoidance of local treatment after intubation because it fatigues the patient. He gives one 2,000-unit dose of antitoxin. This usually prevents further spread of the membrane even in cases that afterward prove fatal. If removed by local treatment, membrane generally forms again. Calomel is given in two-grain doses to produce free dejections. Whiskey and strychnine as required; generally none is needed. Strychnine is good if there is paralysis or vomiting. Corrosive sublimate, one one-hundredth of a grain every one to four hours, and saccharated oxide of iron three grains every four hours, are sometimes given. The most important item is the feeding. By laying the child on its back in an inclined plane, head lowest, which is called inversion or Casselberry's method, none of the food will enter the tube and cause coughing.

Lues, Hereditary, with Keratomalacia.—Peltessoehn¹⁹ reviews the literature of the subject and reports two cases in children 9 and 15 months old respectively. The younger showed involvement of both corneæ, the older only one. Antisyphilitic treatment resulted in cure. Fortunately the disease is a rare one, the author having found it only three times among 16,600 cases examined during the last four years.

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ORIGINAL COMMUNICATIONS.

MALIGNANT GROWTHS OF THE CHORIONIC EPITHELIUM, AND
THEIR RELATION TO THE NORMAL HISTOLOGY
OF THE PLACENTA.¹

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(With three plates.)

MINOT² has said that there is no branch of embryology of which so many and such conflicting articles have been written as that pertaining to the development of the placenta. If this is true of the placenta, then this array of conflicting observations has led to even more confusion in our study of the growths arising from the chorionic epithelium. Much that has been written about the placenta has only served to confuse and render more difficult our investigations of the pathological

¹ Read before a special meeting of the Section on Gynecology of the College of Physicians, of Philadelphia, April 29, 1898.

² Journal of Morphology, vol. ii., No. 3.

NOTE.—For a further collection of the literature mentioned in this paper see two articles of Minot and Williams just quoted.

conditions which we find in this complicated organ. So true is this that the pathologists who have investigated these growths have been obliged to carry their investigations beyond the limits of pathology and, entering the realm of embryology, investigate the fundamental conditions which alone can render an understanding of both subjects possible.

I shall not attempt to give you the earlier history of the neoplasm which is to be the subject of this paper. First, for the sufficient reason that we have a most excellent review of the same in English in Williams' paper on "*Deciduoma Malignum*," and, second, because the questions which were the subject of discussion previous to Marchand's publication were largely settled by his investigations.

Before entering upon a detailed consideration of the subject in hand, it were perhaps well for us to review in short the fundamental facts relating to the placenta itself. Our interest is largely confined to that portion of the chorion known as the chorion frondosum. The well-developed chorion frondosum and that portion of the uterine wall to which it is attached—the basal decidua—forms the placenta. Examining the descriptions of the youngest embryos to be found in the literature, we find that the chorion has developed prolongations covered with epithelium, that these prolongations are in many places attached to the decidua, and that the spaces between them are as yet not filled by the uterine circulation.

The decidua, to which the fixation villi are attached, may be divided into two layers, the outer or compact and the inner or spongy layer. In the compact layer we find a well-defined layer of fibrin, the fibrin layer of Nitabuch. That portion of the decidua lying above this fibrin boundary is known as the decidua placentalis, and is that portion of the decidua which remains attached to the placenta after its removal from the uterine wall. A careful examination of a placenta at term shows in the middle of its structure several large veins and, scattered more toward the periphery, a number of large arteries. The work of Bumm and G. Klein has shown that this arrangement is constant, and it is, therefore, plain that the circulation of the placenta in a general way flows from the periphery to the middle. At the periphery of the placenta is found a large sinus, known as the peripheral sinus. The vessels which enter this peripheral sinus come largely from that portion of the decidua which is reflected upon the outer surface of the fetal

¹ Johns Hopkins Hospital Reports, vol. iv., 1895.

placenta—the so-called decidua subchorialis. There is no direct connection between the fetal and maternal circulation (see Fig. 1).

The villi are prolongations of the chorion. They are of two classes, the fixation villi and the shorter villi which merely float unattached in the blood spaces. The villi consist of projections of the original chorion, the centres of which are composed of fetal connective tissue in which may be found an efferent and afferent vessel.¹ Covering their surface is a complete sheath of epithelium. In young embryos this sheath consists of two distinct layers—an outer, which is a continuous plate of protoplasm without cell boundaries, containing as a rule darkly-stained nuclei scattered more or less regularly through its substance. The inner layer consists of a single row of epithelial cells with distinct cell boundaries and containing a protoplasm very poor in chromatin substance. As a rule their nuclei do not stain as deeply as the nuclei of the outer layer or syncytium.² In many places upon the villi, particularly at their ends, we find projections, the bodies of which are composed of patches of cells derived from, and of the same character as, this inner layer or layer of Langhans. These projections have been called by Kölliker "*Cellknopsen*," or "buds." At the ends of the fixation villi³ which penetrate into the decidua we find a similar proliferation of the epithelial cells. These are, however, not covered by the outer layer as in the true buds above mentioned. Although the syncytium covers the villi in a single continuous layer, we find at many points homogeneous masses, sections of which give the appearance similar to that of a large multinuclear giant cell. The syncytium covering the sides of the fixation villi at the point where the latter enter the decidua spreads out upon the decidual surface, and there forms irregular masses and clumps of homogeneous protoplasm containing the characteristic nuclei of the syncytium (see Figs. 2, 3, and 4).

On many places on the villi we find patches of fibrin, and also covering that portion of the decidua lying between the fixation villi. The blood spaces are all that portion of the placenta between the villi and contain the maternal circulation. As to the origin of these blood spaces many theories have been

¹ Hyrtl has demonstrated the presence of special nutrient arteries in the placenta, branches from the umbilical artery. They extend into the villi.

² The name syncytium was first applied by Kastschenko.

³ Haftzotten.

advanced. The principal among these are those of Winkler and Kossman. Kossman assumed that the syncytium was of maternal origin and that originally the spaces between the villi were completely filled by it. These masses, through a process of coalescence of the vacuoles found in them, gradually disappeared from the centre outward, ultimately only the amount of syncytium forming the layer on the villi remaining, and the spaces thus formed being occupied by the superficial uterine vessels. As to whether the superficial vessels opened directly into the intervillous spaces, or whether through a process of dilatation they merely occupy these areas, has also been a question of discussion. Winkler is the only observer who has claimed to have seen an endothelial covering outside of the syncytium. Merttens has advocated this view, but has not claimed that he could demonstrate an endothelial lining to the blood spaces. Other observers, the latest of whom is Aschoff,¹ have claimed that the blood vessels open directly, through rupture of their walls, into the blood spaces. The method of how this is produced we shall consider later.

The decidua consists of spindle and round cells, larger than the cells of the chorion, and can be easily distinguished from them by the poorness with which they take staining reagents. The deeper or spongy layer of the decidua owes its character to the presence of widely dilated glandular structures, probably the remains of the uterine glands. But few glands can be found in the decidua compacta. In the decidua vera, however, there appears to be no diminution in the number of uterine glands. There is no uterine epithelium covering the free surface of the decidua compacta after the establishment of the intervillous blood spaces.² In a well-developed placenta we find the uterine glands lying in the decidua the seat of various changes. Principal among these is a form of degeneration in which the intercellular boundaries are more or less obliterated, thus giving the epithelium an appearance similar to that of syncytium. Of this condition we shall also have a word to say later.

One element which we have so far not mentioned is the so called giant cell of the serotina. This cell is found widely distributed through the decidua and often into the muscularis. It is often multinuclear, is larger than the cells of the fetal

¹ Archiv. für Gynäk., Bd. l., 1896.

² Duval has shown that in animals the uterine epithelium disappears at the beginning of pregnancy.

ectoderm, and can be distinguished from them by its deeply stained nuclei and cell protoplasm rich in chromatin. These cells are found but sparingly in the decidua vera.

With this short description of the elements with which we have to deal in the placenta, we may pass to a consideration of the pathological conditions in which they play a part. The most common pathological condition of interest found in the placenta is that known as hydatidiform mole. Fundamentally the changes found in this growth consist in a remarkable dilatation of many of the villi, which are filled with a clear fluid, giving them the appearance of grapes, a term which has been applied to them. This change occurs during pregnancy and is often found in portions of retained placenta. For a more exact knowledge of this condition we are indebted to Marchand. His investigations show that only part of the villi in hydatidiform mole are subject to this peculiar degeneration. Many of the villi retain a more or less normal appearance. He found that the degenerated villi were covered by a double layer of epithelium, which maintained the characteristics of the epithelium and syncytium covering the normal villi. The syncytium he found in many places to show a pathological increase with the projection of large clumps and bands. At these points he observed large numbers of giant cells spreading through the decidua and invading the muscular wall of the uterus. He was able to demonstrate that these cells were derived from the epithelial and syncytial layers of the chorion. He found them arranged in masses around the blood vessels, that they penetrated the blood-vessel walls and were often found lying free in their lumina.

Marchand's observations on hydatidiform mole are of especial value as showing us the migratory ability of chorionic cells. We find here also a pathological growth of the syncytium, and at the apices of the villi the proliferations of the ectodermal cells had in many places broken through the syncytium. The question as to whether the migration of the chorionic cells in this case was pathological is not absolutely clear. The observations of Fränkel and the recent work of Franqué, both of whom failed to find the cells in large numbers in the deep layers of the decidua, suggest a possible pathological character. On the other hand, the work of Pels Leusden tends to show that this migration into the uterine wall is a constant phenomenon, and he ascribes a distinct function to these cells, which he believes form the basis of regeneration of the uterine glands

after childbirth. He found the cells arranging themselves in rows and loops in the muscle wall, and believed he could demonstrate a transition into typical glandular structure.

One year previous to the publication of Marchand's observations on hydatidiform mole, Sanger, through addresses made before the Leipzig Obstetrical Society in 1888, the German Gynecological Society in 1892, and later by an exhaustive monograph, called attention to a class of malignant growths following childbirth. He collected several cases from the literature and gave in great detail the microscopic characteristics of the tumors and their metastases. The description of the clinical symptoms of this condition given by Sanger is so characteristic that a short repetition of the principal features found in his cases holds good for all those which have come after them. The patient presents herself with either a history of childbirth or abortion; or this part of the history may be obscure, as cases have been known to follow extrauterine pregnancy. She complains of constant bleeding; is, as a rule, very emaciated. On examination the uterus is found enlarged and soft, and on curettement masses of tissue resembling placental tissue are removed. In other cases the tissue obtained by curettement shows the characteristics of hydatidiform mole. The microscopic examination of these scrapings gives the diagnosis. If the case is at all advanced the uterine wall will be found deeply invaded, and in many cases perforation with the curette is not a remote possibility. If the case is not at once treated by extirpation of the uterus, or has already advanced beyond the stage where such treatment is possible, metastases in the vaginal wall or labia soon develop, followed by metastases in other organs—liver, lungs, spleen, etc. The patient sinks rapidly, emaciation becomes greater, the pulmonary metastases give rise to symptoms resembling pneumonia, and coma is followed by death in an incredibly short period of time—often but a few weeks from the beginning of the growth. These cases seldom follow directly on abortion or childbed. One case was three years after the puerperium. In a large number hydatidiform mole has preceded the malignant growth. This then, in short, sums up the clinical symptoms of these highly interesting cases.

The microscopic examination of these tumors shows a fairly constant presence of various elements; in all cases at least one characteristic element is present.

Sanger described deeply stained spindle and round cells and

masses of protoplasm. He believed these tumors, which had their seat in the uterine wall, to be derived from the decidua and belonged to the sarcoma group. He proposed the name *sarcoma uteri deciduo-cellulare*. It is not at present necessary to consider the reasons which brought Säger to his conclusions.

In 1894 Merttens¹ published a most interesting monograph "On the Normal and Pathological Anatomy of the Human Placenta." His observations were based on a young embryo sent to the laboratory of Langhans in Berne. This monograph is interesting in many ways, but principally because Merttens' conclusions regarding the derivation of the syncytium have greatly influenced the work of the pathologists, notably that of Marchand.

Merttens observed the growth of syncytium into the uterine glands, and the changes in the epithelium of the latter which indicated a metamorphosis into syncytium. This change in the glandular epithelium consisted in its losing its cell boundaries, *however only partially*, and the nuclei becoming larger and taking the stain more intensely, thus approaching in character those of the syncytium. He advocated the theory of Winkler that the superficial uterine vessels dilated into the intervillous spaces until they completely filled them, the endothelium later disappearing. He observed the syncytium growing down in bands into the deep layers of the decidua. He believed that the syncytium was derived from the epithelium of the uterine glands and that it grew upon the villi from the maternal side.

In 1895 appeared in the *Monatschrift für Geburtshülfe und Gynäkologie* an exhaustive article by Marchand including the description of two cases of so-called decidual tumors.

The treatise of Marchand is too exhaustive to allow of following in detail all his observations, but his conclusions were of the first importance, and it is to him that we owe our first understanding of these cases. Marchand described as composing his tumors, and clearly demonstrated the identity of Säger's cases as the same, two elements. The first consisted of long bands and masses of protoplasm, void of cell boundaries, taking on a distinct tone with the usual stains, the substance of which contained numerous vacuoles, and scattered irregularly through these masses and bands were larger and smaller deeply stained nuclei. On the periphery of these masses was

¹ Zeitschr. für Geb. u. Gyn., Bd. xxx., 1894.

often a distinct row of ciliary-like projections, which, however, bore no resemblance to the cilia of the uterine epithelium. These bands and masses were characterized by a complete absence of karyokinetic figures in the nuclei, which, however, showed marked tendency to fragmentation. The second element found in these tumors were cells containing nuclei somewhat smaller than those in the syncytium, the bodies of which were composed of protoplasm which, in contradistinction to that of the syncytium, took stains scarcely at all. These cells were found proliferating in patches, where they took on a polyhedral form and bore a more or less distinct relation to the syncytium, being arranged along or within spaces surrounded by it (see Fig. 7). The nuclei of these cells showed numerous and varied forms of karyokinesis, and, treated with the proper reagents, the cell protoplasm proved to be rich in glycogen. In short, Marchand found all the morphological characteristics of the cells composing the layer of Langhans covering the villi in the normal chorion, and concluded that these cells were derived from them. The derivation of the syncytial-like masses from the syncytium of the chorion had been previously suggested. Marchand further observed the cells of the tumor wandering into the deeper structures and there penetrating into the blood vessels, besides noting that the metastases were formed by means of the circulation, and saw in this a difference between these growths and the ordinary carcinomata which invade the lymph channels. The common occurrence of metastases in the lungs was ascribed to this cause.

Through the primary tumor and in the metastases were numerous spaces lined with syncytium and filled with blood or fibrin—a condition pointed out by Marchand as analogous to the arrangement of the placenta. In such cases the proliferating cells were arranged under the syncytium, away from the blood space (see Fig. 7).

Depending upon the observations of Merttens and others, Marchand assumed that the syncytium was derived from the epithelium of the uterine glands. He believed that all these tumors had their origin in the epithelium of the villi, one element, the ectodermal cells, of fetal origin, the other, the syncytium, from the maternal structures. He considered both structures as epithelial and classed the tumors among the carcinomata.

The appearance of Marchand's article has completely revolutionized our ideas regarding these growths, *no one at the*

present day, with the exception of Gottschalk, holding that the connective-tissue elements either of the villi or the decidua play any part in their formation, or still clings to the idea that they belong to the sarcomata. Since the publication of Marchand's article the literature of these neoplasms has swelled enormously. I shall review in short the more important articles. But two publications containing original investigations on the subject have appeared in this country—that of Bacon, from Chiari's¹ laboratory in Prague, the other by Williams, of Baltimore. As Bacon's publication appeared about the same time as Marchand's, he was apparently not acquainted with that observer's conclusions, so we find him describing syncytium without recognizing its significance, and concluding that the tumor is of decidual origin. He devotes much attention to the relation of the tumor elements to the degenerated muscle cells of the uterine wall, and refers to the opinion held by Menge and Pestalozza that these degenerated fibres formed the matrix of the tumor cells. He gives us a very clear description of the invasion of the vessels by the tumor cells, and his Fig. 3 shows a vessel thus invaded. His exact words are of interest. He says: "The tumor cells, either single or in the protoplasmic rows, are often found in the coats of the blood vessels. The way in which rows of nuclei of four or five or more separate the intima of the vessel from the adjoining coat and grow in the rich soil of the blood serum is shown in Fig. 1. The same figure also shows the final penetration of the intima."

The above description is so characteristic, and is met so often in the writings of various authors, as to leave no doubt that Bacon has here observed the characteristic penetration of the blood vessels found without exception in chorion carcinoma. He also observes the wandering of isolated cells into the deep structures. The morphological characteristics of his tumor are so suggestive as to warrant giving his description again in full (page 690): "In one series of sections of the uterine wall I found a nest of tumor cells apparently quite different in character from these cell masses (Fig. 3). This tumor nest, which was about one and a half millimetres in diameter, lay in the inner part of the neoplastic zone, next the necrotic layer. The walls of the cavity in which it was found were penetrated by typical neoplastic cells, single and in rows. It was impossible to determine whether the cavity was a connective-tissue

¹ AMERICAN JOURNAL OF OBSTETRICS, 1895

or lymph space or the lumen of a vessel. The penetrating neoplastic cells could be traced to the internal surface of the wall of the cavity on one side, where they gradually acquired the character of the cells of the tumor nest. From this region the tumor seemed to take its origin and sprout forth in stems, branches, and buds. The buds and branches on the circumference of the nest in some cases seemed to form vascular connections with the wall of the cavity. *Blood vessels with distinct endothelium were found in the branches.*" (Italics are mine.)

The description here given is so suggestive of the normal structure of at least the buds of Kölliker found on the apices of the chorionic villi that one is constrained to believe that we have a true attempt at such a formation. The blood vessels with endothelial lining in such processes are exceedingly suggestive, and yet on the following page (691) Bacon says: "Such a protoplasmic mass of syncytium is not, moreover, peculiar to chorionic epithelium, and does not in itself justify one in assuming that the epithelium of the chorionic villi bears any genetic relation to the tumor cells." Bacon describes the characteristic spaces in the tumor structure, filled with fibrin, and noted the hemorrhagic character of the growth. In the metastases found in the lung he again observed the buds and masses of syncytium described in the uterine wall. He closes his article with a discussion of the derivation of the tumor cells, and ascribes the same to the decidua—a result clearly based on the mistaken observations of Novi-Josserand and Lecroix, who confused the chorion cells, with their deeply stained nuclei, with the paler, less rich in chromatin, cells of the decidua. Considerable space is devoted to the consideration of the relation of the tumor cells to the muscle fibres, and he correctly describes the destructive effect of the neoplastic elements on the invaded tissue. He closes his article with a tabulation of twenty cases from the literature, and notes the interesting fact that in ten of these the tumor's growth followed the more simple condition of hydatid mole. His conclusions are based on the supposed decidual character of the cells. His last conclusion separates a class of tumors composed of elements derived from the chorionic villi—namely, those of Pestalozza, Kaltenbach, Gottschalk, Köttnitz, and Schmorl.

Williams noted in his case the difference with which cells of apparently the same kind took the stain. The cells, where they were closely packed together, were spindle-shaped (p. 467). He described the boundary between the tumor and the muscularis

as very irregular bands of cells stretching into the uterine wall, separating and producing atrophy of the muscle fibres. Isolated groups of cells were also to be seen. Of still greater interest are his observations on a mass of syncytium which he found in the lumen of a vein (Fig. 8). This syncytium was for the most part of the band type, but masses were also present (page 470). He observed several veins near one of the tumor nodules in the uterus, filled with thrombi containing cells, and also cells lying free in the venous lumen.¹

In the metastases Williams described a most interesting relation of the cells (page 471). I copy literally from his text: "In other places the definitely characteristic syncytium appears to form a distinct border, beneath which there are several layers of what appear to be definitely marked epithelial cells. And in other places it forms large finger-like masses, with nuclei scattered all through them, which lie free in the blood and do not appear to be in connection with any form of cells." Here we have a very clear description of the main characteristics of a tumor springing from the chorionic epithelium. In Fig. 6 accompanying Williams' article we find also the difference in the staining properties of the nuclei, which is so similar to Aschoff's illustration of transition syncytium from the normal villi that the comparison cannot fail to show us that we are here dealing with structures very closely related (see Fig. 8, taken from Williams, and Fig. 6, from Aschoff). The point of greatest interest in Williams' paper is the expression of belief that the syncytium and the cellular elements of his tumor are of the same origin. Following Marchand in accepting the theory of Merttens and others of the maternal derivation of the syncytium, and observing the remarkable points of similarity between the protoplasm and nuclei of the cells in his tumor and the syncytium, he expressed the belief that the cells were perhaps nothing more than cross-sections of syncytium. This explanation of their origin presupposes that the syncytium is composed of strings of such thickness that a cross-section would be about the diameter of the cells described. In view of this theory I have been led to examine the normal syncytium covering the villi of a young embryo, kindly loaned by Dr. Aschoff. The examination of all of the villi of this

¹ Many of these tumors have given rise to metastases in the vaginal wall. Of special interest in this connection is a newly reported case of Schmorl, in which no growth in the uterus was demonstrable, but a large nodule of typical structure appeared in the vagina.

egg shows them to be covered with a continuous layer of syncytium, or a single layer of cells (Langhans) with here and there a mass of syncytium. As the villi are cut in all directions, many vertical and others horizontal, it would appear that the syncytium is a more or less continuous plate or sheath of protoplasm. If this is the case, a section through the smallest thickness would give us the appearance of bands. This plate or sheath development of syncytium occurs, however, only when the arrangement of cells from which it is derived is such that a melting together of the same would form a plate. This is the case on the chorionic villi. It is not likely that in a tumor or a metastasis such a favorable arrangement would be found, and yet where the conditions have been such that a more or less untrammelled development was possible—*i.e.* in soft structures, in the blood vessels, etc.—we find the most perfectly developed syncytium. On the whole I should consider this slight evidence against Williams' theory of the derivation of the cells in his case.

Besides these publications in America, the German literature has contained articles from various sources, all of which do not require special mention. Certainly, next to that of Marchand, the most important publication on the subject is the short but pertinent article of Aschoff which appeared in the *Archiv. f. Gynäkologie* in 1896. Aschoff gives us his observations of the relations found in a two months pregnant uterus, in which he verified all the observations of Marchand relative to malignant growths of the chorion. His observations show conclusively that the syncytium is derived from the fetal ectoderm by a process of metamorphosis from the layer of Langhans. His investigations of the coverings of the villi lead to the interesting result that a distinct differentiation of the syncytial layer from the underlying cell row is impossible. His Fig. 6 (see Fig. 6) shows a mass of protoplasm in which the paler nuclei of Langhans' layer are interspersed with the more deeply stained syncytial nuclei in such a manner that a linear arrangement of either element cannot be considered. He found as characteristic of the syncytium in this embryo the same condition which Marchand had already recorded for malignant growths, namely, an absence of glycogen, which was richly distributed through the proliferating elements of Langhans' layer. He especially observed an entire absence of glycogen where no proliferation was apparent.

Of especial interest are his observations regarding the pres-

ence of fat in the chorionic layers. In this respect the syncytium shows the reverse condition of that found in the examination for glycogen. Aschoff found the syncytium invariably contained fat in finer and larger drops, and that cells of the inner layer, where they formed buds, also contained large quantities. From this he concluded that the presence of a large amount of fat was not characteristic of the syncytium, but rather that where the chorionic cells had a more marked metabolic function—*i.e.*, came more freely in contact with the maternal circulation—there the deposit of fat was greatest. He found the fat arranged regularly in the periphery of the cell, larger or smaller drops predominating, and the transition from the predominance of one element to the predominance of the other of such a gradual character as to suggest the presence of fat as a normal condition. This is distinctly different from the arrangement found in pathological infiltration, where the drops are scattered irregularly through the cell protoplasm. Where the villi came in contact with the decidua Aschoff found the cells forming the buds had taken on a more spindle form and in many cases had broken through the syncytium, penetrating into the decidua. The syncytium also showed a similar change, namely, spindle-shaped nuclei, and, passing out from the end of such syncytium, a row of cells streaming into the decidual layer. The chorionic cells were here easily distinguished from the decidual elements, the former showing a deeper ground tone, the decidua cells the same general appearance found in the vera, namely, pale spindle-shaped cells, with oval or round vesicular nuclei, poor in chromatin.¹

Aschoff calls especial attention to the participation of the syncytium in this invasion of the decidua. The decidual cells surrounding such areas contained a marked amount of fat, but whether this fat was the result of degeneration of the cells, or whether it had merely been absorbed from the syncytium, he left undecided. However, the decidua not adjacent to such points of invasion was free from fat. The presence of large drops of free glycogen in these areas he considered due to the hardening process, and further investigation of fresh cases of abortion showed that the cells in the buds invariably contained the characteristic half-moons of glycogen in the cell protoplasm. True decidual cells were found to be completely free from glycogen. Aschoff described the three typical layers of the

¹ For a good illustration of the difference between true decidua cells and the chorion cells see Fig. 4, taken from Merttens.

decidua. He examined the relation of the syncytium to the glandular epithelium, to ascertain if changes suggestive of a transition of the latter into the former, as described by Merttens, were present. *In no case was he able to find a growth of syncytium into a gland in which the epithelium was not broken down. Sections hardened with osmic acid showed very plainly the degeneration of the glandular epithelium, whose protoplasm, filled with irregularly distributed fat, could be easily differentiated from the syncytium with its characteristic arrangement of fat droplets.*

In the compact layer of the decidua the streams of chorion cells surrounded the vessels, and, breaking through their walls, appeared as described by Merttens. Not only did these cells penetrate into the lumen of the vessels, but in many places Aschoff found syncytium lying free in the blood current. So characteristic was this relation of the invading cells to the vessels that Aschoff could ascribe no other function to this invasion than that of opening up the maternal vessels into the intervillous blood spaces. Through the entire decidua, and often deep into the muscularis, isolated chorion cells were to be found. The identity of the cells could be clearly distinguished by their deeply stained nuclei, and the entire absence of such cells from the decidua vera greatly weakens any supposition that they were derived from the true decidua cells. To the description of this most interesting normal specimen Aschoff adds two cases of chorion carcinoma, in one of which no syncytium was to be found, only the spindle and round cells derived from the cell layer of the chorion. These cells penetrated the vessels deep in the uterine wall, occluding them through thrombosis, producing large areas of necrosis—in short, giving pictures similar to those found in Marchand's cases. In Case 2 the original tumor had made a metastasis in the left labium majus. On opening this tumor the remarkable discovery was made that it contained a hydatid mole. Here, then, at last was found *a tumor which had developed a metastasis containing complete chorionic villi, i.e., chorionic epithelium two forms, fetal connective tissue, and all typically arranged.* Four months previously the patient had discharged a typical hydatid mole from the uterus.

Freund¹ has reported a case in which he was unable to demonstrate any cellular elements, the entire tumor and metastasis consisting of syncytium. He removed a deeply

¹ Zeitschr. für Geb. u. Gyn., Bd. xxxiv., 1896.

adherent placental polypus from the uterus. Seven weeks later the patient developed a metastasis in the vagina. Examination of both tumor proper and metastasis, according to Freund, showed them to consist of typical syncytial bands. Apparent cells he explains as cross-sections of syncytium, in this following Williams, without, however, mentioning his paper or referring to his case. Freund does not agree with Aschoff's observations regarding the fetal origin of syncytium, believing that he has not clearly demonstrated its derivation from fetal ectoderm. He considers that Aschoff has, however, clearly proved that the syncytium is not a derivative of the glandular epithelium. Freund indorses the observations of Turner, who maintained that the syncytium was derived from the endothelium of the blood vessels, and quotes the description of Aschoff and others of the relation of the syncytium to the uterine vessels. He does not consider the case of ectopic gestation reported by Gunnser—in which in the non-pregnant portion of the tube the epithelium remained normal, while in the portion occupied by the embryo the epithelium was replaced by syncytium—to prove more than that the syncytium is of maternal origin. He suggests that the epithelium may have been destroyed by pressure, but gives no further reasoning to show why the syncytium should be a derivative of the maternal structure. He suggests that as in Aschoff's case there really existed streams of cells from the surface of the serotina to the vessels, they could be considered from the other stand point—*i.e.*, as masses of syncytium and cells derived from the vessel endothelium, making their way to the surface. This hypothesis advanced by Freund in support of the observations of Turner, in the light of what Marchand has taught us of the wandering of the cells into the deeper structures in hydatid mole, and Aschoff's observations showing the identity of these cells with those found in the normal embryo, and malignant growths, appears to me to be inadmissible. The evidence in favor of Aschoff's interpretation seems conclusive. It is evident that Freund, having found only syncytium in his case, has wished to separate the syncytium from the cellular layers, in order to render an explanation simpler. The derivation of syncytium from the cellular layer, and the identity of the spindle-shaped cells as transformation forms, render such a separation of tumors containing only one element of the fetal ectoderm unnecessary. Aschoff's case contained only the cellular elements, Fränkel's and Freund's case only the syn-

cytium. Marchand's and the majority of cases both elements; but this fact in no way suggests a separate origin of these forms, merely a preponderance of a particular form in special cases, all of which can be traced to a common origin, and each of which has its counterpart in the epithelium of the chorion.

Franqué¹ describes a tumor in which he was able to demonstrate all the morphological characteristics observed by Marchand. He found, and laid great stress upon, the typical arrangement of the syncytium and cellular elements, the latter occupying the centre and filling out tube-like structures of the former. In a specimen hardened in Müller's fluid he believed he could demonstrate an intercellular substance in the cell islands, and from this point out he differed with Marchand as to the origin of the layer of Langhans, holding to the older theory that it was of mesodermal origin. The syncytium he believed was the true fetal ectoderm. His examination included normal embryos. The observations of Franqué to show that the layer of Langhans was derived from the fetal connective tissue of the villi do not seem to me to be in any way conclusive. In fact, he expresses himself with the greatest caution,

¹ Zeitschr. für Geb. u. Gyn., Bd. xxxiv., 1896.

DESCRIPTION OF PLATES.

FIG. 1.—Diagram of the placenta after Hofmeier.

FIG. 2.—Diagram of a villus. Inner layer of cells, layer of Langhans (*a*) covered by continuous layer of syncytium of darker tone (*b*), outside of which are darker patches representing fibrin (*c*). A broad layer of fibrin is represented covering the decidua, through which the central villus penetrates. All villi show the proliferation of cells of Langhans' layer at their ends. At the base of the picture the decidua, composed of pale cells with vesicular nuclei (*d*). Scattered among them are more deeply stained cells (*e*) derived from the chorion.

FIG. 3.—Diagram of villus, showing attachment to the decidua, the chorionic cells wandering into the compacta and penetrating the wall of a blood vessel. In the blood vessel lumen, choriocic cells and syncytium. Large pale cells, true decidual cells, dark cells from the chorion. Based on theory of Aschoff. (Same lettering as Fig. 1.)

FIG. 4.—After Merttens. Shows attachment of normal villus to decidua. Large pale decidual cells (*a*). Body of villus composed of ectodermal cells, showing chromatin in nuclei (*b*). Surface of villus covered by syncytium (*c*).

FIG. 5.—After Minot. Surface of normal villus, showing darker syncytium and cell layer with lighter protoplasm.

FIG. 6.—After Aschoff. Surface of normal villus, showing intermingling of lighter and darker nuclei, merging of lighter protoplasm surrounding cells into the darker syncytium, and drops of fat (black) near the periphery.

FIG. 7.—After Marchand. Showing cells and syncytium, with typical arrangement from a malignant growth.

FIG. 8.—After Williams. Shows mass of syncytium with intermingling darker and lighter nuclei.

FIG. 9.—After Marchand. Shows surface of villus in hydatidiform mole. Intermingling of darker and lighter nuclei in both layers. Surface shows cilia.

FIG. 10.—After Marchand. Shows a mass of syncytium from malignant tumor. Light and darker nuclei in same mass. Surface shows ciliary projections.

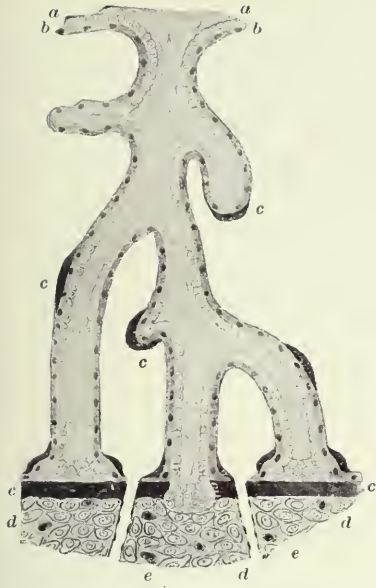


FIG. 2.

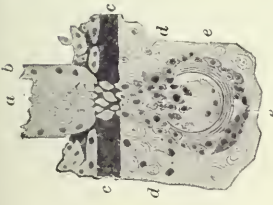


FIG. 3.



FIG. 4.

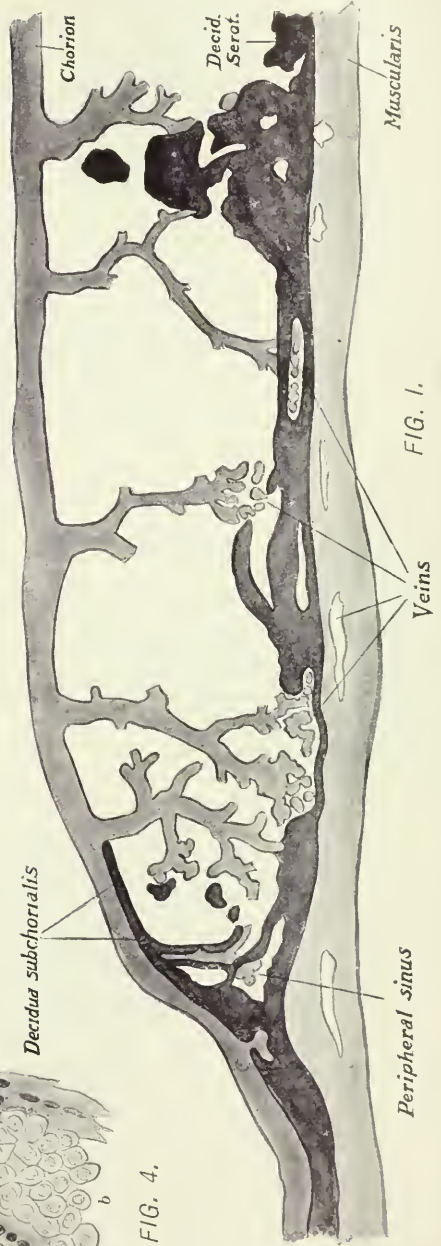


FIG. 1.

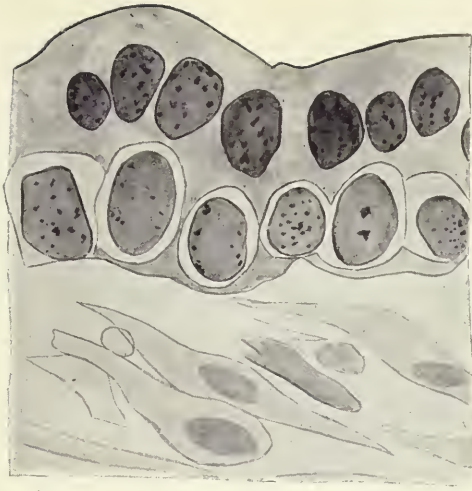


FIG. 5.

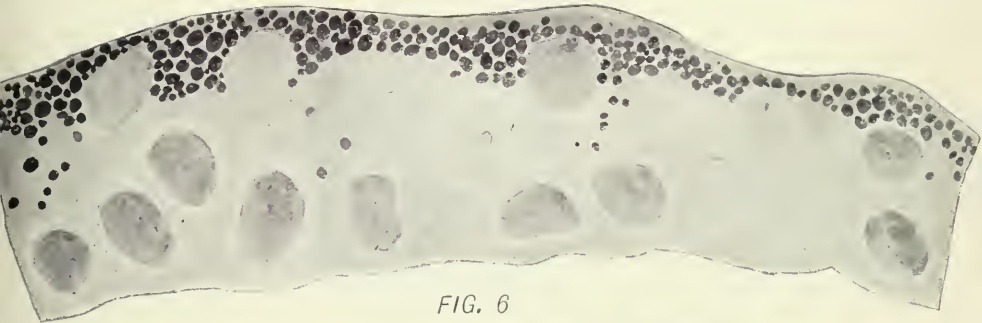


FIG. 6



FIG. 7.

MALIGNANT GROWTHS OF THE CHORIONIC EPITHELIUM, AND THEIR
RELATION TO THE NORMAL HISTOLOGY OF THE

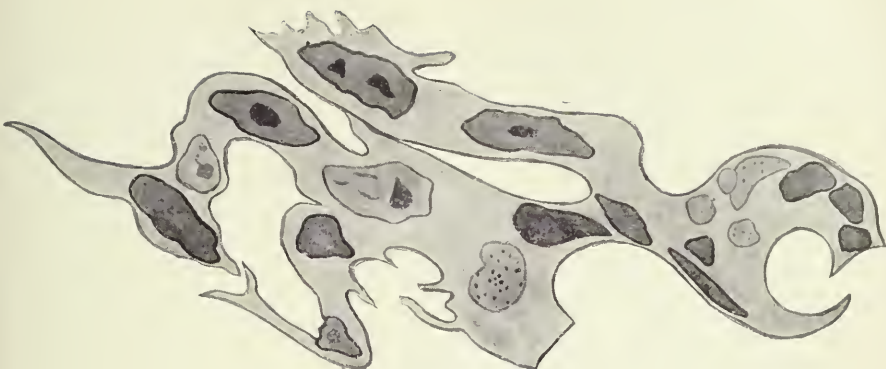


FIG. 8.

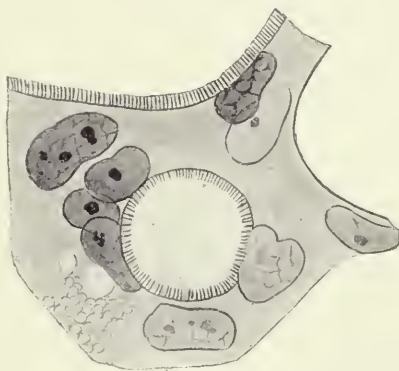


FIG. 9.

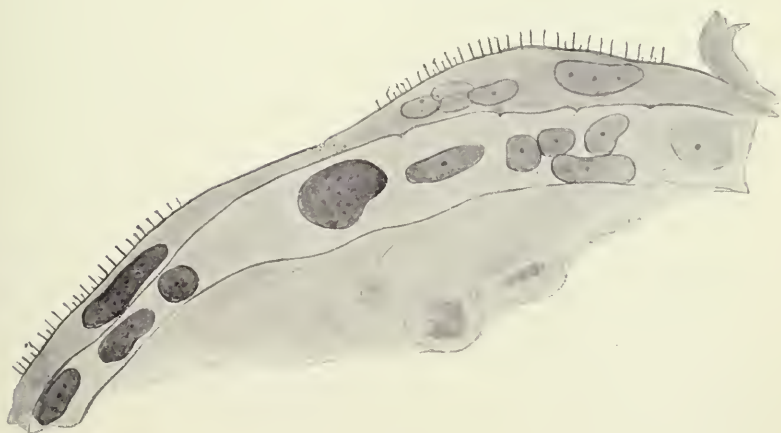


FIG. 10.

MALIGNANT GROWTHS OF THE CHORIONIC EPITHELIUM, AND THEIR
RELATION TO THE NORMAL HISTOLOGY OF THE

repeatedly saying that he considers the origin of the layer of Langhans as still in doubt. Regarding the syncytium he is more positive, indorsing the observations of Aschoff, and states that with Aschoff he was unable to find any evidence in support of the theory of Kossman and Merttens of a maternal origin.

Of especial interest appears to me the plainly different amount of chromatin in the nuclei of the syncytium, as shown in the illustrations accompanying Franqué's article. His observations on hydatidiform mole confirm in every particular those of Marchand, except that he found but few deeply stained cells below the fibrin layer—an observation which agrees with those of Fränkel. He held, therefore, that the case of Marchand was already of a malignant character, and that his case and those of Fränkel represented the non-malignant and usual type. That such cases could later become malignant he held as highly probable.

The latest publication of importance is that of Gebhard.¹ He reports in full three cases of chorion carcinoma, all of which contained both cellular elements and syncytium. His second case furnishes us with a most interesting confirmation of Marchand's theory of the derivation of the cellular elements of the tumor. *In the wall of the uterus, isolated from the main growth, Gebhard found a placental villus containing a connective-tissue axis, from the surface of which the ectodermal cells could be demonstrated invading the tissue and forming a part of the tumor.* The importance of this observation is clear. Marchand has shown me a similar specimen from an as yet unpublished case of his own. The further observations of Gebhard confirm the investigations of others of the syncytial-like changes in the epithelium of the uterine glands. He also observed changes in the glandular epithelium which suggested malignant degeneration. He indorsed the now universally accepted observations of Marchand, but adhered to the maternal origin of the syncytium, however stating that the matter was by no means certain and that only fuller observations of very young embryos could decide the question. In the light, then, of these cases, I take pleasure in stating to you that Prof. Marchand has informed me that within a short time such an embryo has come into his possession, and that after a careful examination of it he completely indorses all of Aschoff's views regarding the syncytium. I have had the pleasure of

¹ Zeitsch. für Geb. u. Gyn., Bd. xxxvii., 1897.

seeing Prof. Marchand's specimens, and there is no question as to the similarity of the finds in his and Aschoff's cases. As his paper will shortly appear, I shall refer you to it for a more detailed account of this embryo.

Returning, then, to Williams' paper with these facts in mind, we find that his observations on the similarity of the protoplasm in the cells and in the syncytium, and the fact which he observed of the presence of deeply and poorly stained nuclei in the same syncytial mass, and of the variability in staining of the cell nuclei, are of the first importance. If his interpretation wished to connect the cells with the syncytium and to consider both elements as maternal, he was merely observing what Aschoff has now shown to be the fundamental characteristics of the syncytium and cell layers of the chorionic epithelium.

*Marchand established the relation of the cells in these tumors to the cell layers of the villi, and ascribed to the syncytium a maternal origin, but it remained for Aschoff to give us the information which should combine the important observations of these investigators, and, by rejecting their explanation of the derivation of the syncytium, bring the important information which we have gained from these cases into harmony with the latest observations of the embryologists."*¹ There can be but little doubt that the cells in Williams' case are of the same nature as in Marchand's, and that they are derivatives of the chorionic cells of Langhans' layer.

The penetration of the cells in these neoplasms into the blood vessels accounts for the hemorrhagic character of the growth. They are carried in the blood stream to various organs, where they find a lodging place, and in their further development may produce syncytium.²

The presence of fat in normal syncytium should not necessarily lead us to expect to find it in cells forming a malignant growth, and as a matter of fact we find but little. Aschoff

Ulesko-Stroganowa, in an article in the *Monatsch. für Geb. u. Gyn.*, Bd. iii., 1896, on the "Microscopic Structure of the Placenta," concluded that in rabbits as well as in the chorion of man both layers of the villi are of fetal origin. He clearly demonstrates the derivation of the syncytium from the layer of Langhans.

² I cannot find that any one has agreed with Kossman, who claims that the cellular elements of these tumors are derivatives of the syncytium by a process of breaking off, in which the syncytium becomes divided into cells.

considered the presence of fat an expression of normal function in the syncytium, when arranged regularly near the periphery of the protoplasm. This presence of fat he did not consider a degeneration as we commonly understand that term. Its presence in the non-proliferating structures suggests a certain condition of ripeness of the cell. Glycogen, on the contrary, is present in large quantities in the proliferating structures and in the malignant growths. It is just possible that this condition of richness in fat is indirectly a safeguard against malignancy, for we know that chorionic epithelium can be carried by the blood stream into the lungs, as observed by Schmorl in eclampsia, and the same phenomenon has been lately produced experimentally by Maximow.

Under ordinary conditions these cells do not proliferate, although appearances have been observed which suggested such a possibility. Two years ago I undertook an experiment on rabbits, in which I removed small pieces of young placenta, keeping the same at body temperature, and injected small fragments into the jugulars. My results regarding proliferation were negative, as were those of a similar experiment performed by Prof. Orth, and there seems little reason to expect that *normal* placental cells will proliferate in foreign tissue when separated from their base. As we should expect, glycogen is present in the malignant cells and, as Aschoff has also shown, in the *proliferating* cells of the normal chorion. Its absence from the fat-bearing cells is again suggestive of their having reached a state of maturity.

In these cases we have before us a form of true parasitism, one human structure invaded by structures of the other. The apparent rarity of chorion carcinoma in America may be more apparent than real. We have so far but one well-authenticated case, that of Williams. It seems improbable, at least in the large medical centres, that a condition so grave, so characteristic, and so easy of a clinical diagnosis should pass unobserved, and yet the attention which has been called to these cases since 1895 has swelled the literature from 20 cases to 52, to which I can add a knowledge of two unpublished cases of Schmorl and one of Marchand, making in all 55. This sudden increase, due to a better knowledge of these tumors, would suggest that when the neoplasm is better recognized in this country we shall at least find that we have our proportion. The majority of the cases have been found in Germany, France, Italy, Russia, and

England, in the order named. To the 49 cases collected by Pestalozza and Franqué may be added those of Gebhard, 3, making 52, and 1 case of Schmorl's of which I have the necessary data to include in these statistics. Of these 1 was treated by curettement (Menge), 20 by total extirpation. Twelve of the above followed hydatidiform mole, 2 followed abortion. Nine followed premature birth and delivery at term. Recurrence has so far occurred in 10; of these, 1 after abortion, 4 after normal delivery, and 6 after hydatidiform mole. Only 1 of these cases is older than five years, the majority under three, and several under one year.

The following is a collection of names from the literature under which these growths have been described: Carcinoma corpus uteri with remarkable metastasis, carcinoma corpus uteri following pregnancy, sarcoma telangiectoides, sarcoma hemorrhagicum, infectious sarcoma, sarcoma following hydatidiform mole, destroying placental polyp, deciduoma, deciduoma malignum, chorio-decidual tumor of malignant character, deciduoma sarcomatosum, deciduo-sarcoma uteri, sarcoma deciduale, sarcoma deciduo-cellulare, sarcoma deciduo-chorion cellulare, blastoma deciduo-chorion cellulare, chorion carcinoma, chorion epithelioma, syncytial tumors, syncytioma malignum, carcinoma syncytiale uteri.

Ectopic Gestation.—The interesting changes found in the tubal epithelium in ectopic gestation bear, no doubt, some relation to syncytium. I have examined several cases of ectopic gestation in this regard, but have never found any changes which would warrant the term syncytium, and it is my belief that we have here nothing more than the degeneration of the epithelium found by Aschoff in the uterine glands, giving it a syncytial-like appearance. The examination of such epithelium for *fat* would throw light on the question, the arrangement of the fat droplets giving us the clue to the true condition. True syncytium is of course formed in ectopic gestation, but it owes its origin to the fetal ectoderm.

In closing my article I wish to say a few words regarding the anatomy of the normal placenta, viewed in the light of our knowledge of these growths and the investigations of the normal chorion which they have stimulated.

Syncytium.—There have been various theories as to the origin of the syncytium:

1. From the fetal ectoderm.
2. From the decidual elements of the serotina.

3. From the epithelium of the glands in the serotina.

4. From the endothelium of the superficial uterine vessels.

Strahl maintained that no karyokinetic figures were to be found in syncytium, and Marchand observed an entire absence of mitosis in the syncytium in hydatid mole and syncytial tumors. Kossman, however, states that especially in syncytium were the finest karyokinetic figures to be found.

The nuclei show frequent occurrence of fragmentation. On the whole the nuclei in the syncytium are more rich in chromatin, and they, as well as the ground substance, stain more deeply than that of the underlying cell layer. Covering the outer surface of the syncytium—that is, the surface opposed to the maternal circulation—is often seen a fine row of ciliary-like projections. This condition is, however, not constant. Marchand found it both in hydatid mole and syncytial metastasis, as shown in Figs. 7 and 8 of the plate. He considered this ciliary effect to be caused by the presence of fine vacuoles arranged along the periphery. Normal syncytium has a marked tendency to the formation of vacuoles in its protoplasm. This characteristic is also present in the syncytium of malignant growths and hydatid mole. Minot¹ states clearly, in the beginning of that portion of his article which is devoted to the human chorion, that he considers both layers of the villi to be derived from the ectoderm. He cannot agree with Winkler that the villi are at any time covered with endothelium, and says that a prolonged and careful search has failed to find anything of the kind. In his description of specimens of chorion made by Langhans from an embryo of three weeks, and hardened in osmic acid, he says the nuclei are darker than the matrix (see Fig. 5). The illustration which he gives of this specimen on page 394 shows the syncytium to be more darkly stained than the underlying cell layer—a phenomenon which, in the light of Aschoff's observations, is no doubt in part due to the presence of fat, although in this connection Minot is silent. I have added this illustration to the table I have collected of illustrations from the work of various authors. These illustrations show the similarity of the nuclei in the syncytium, and where the cells of Langhans' layer are depicted their similarity is also apparent. We have first in the illustration 5, taken from Minot, the characteristic difference between the cells of Langhans' layer, with its lighter nuclei and protoplasm, and the syncytium. In

¹ Journal of Morph., vol. ii.

illustration 7, taken from Marchand, we can easily see the preservation of this arrangement in a malignant growth. In Fig. 6, after Aschoff, we see how in a very *young* embryo this arrangement is not preserved. The darker and lighter nuclei are intermingled, and the protoplasm of the cells in the layer of Langhans merges into the darker protoplasm of the syncytium. In Fig. 8 we have the presence of darker and lighter nuclei in a syncytial mass from a malignant growth as depicted by Williams. No. 10 shows the same condition from one of Marchand's cases. No. 9 also shows the same and is taken from Marchand's illustrations of hydatidiform mole.

From these illustrations we can plainly see that any attempt to demonstrate a constant boundary between the nuclei and protoplasm of the two layers must meet with defeat, and we must agree with Minot and Aschoff that the one is the derivative of the other. As the cell layer covering the villi disappears entirely in the advanced development of the villi, and the syncytium remains, we must conclude that the latter is a derivative of the former.

Fibrin.—The fibrin found in the placenta occupies a most interesting relation to the fetal ectoderm. We find on the surface of the villi isolated patches of fibrin, intimately connected with the epithelial layer and sending processes into the syncytium. There are many reasons for considering this fibrin to be the result of degeneration of the epithelium, especially the syncytium, and Minot clearly advocates this theory. Suggestive, in this connection, is the increase in the amount of fibrin toward the end of pregnancy, and the extensive degeneration found in the epithelium at that stage. The presence of canals, first described by Langhans, running in all directions through the fibrin masses, has caused it to be called canalized fibrin. The hyaline and glistening appearance of these fibrinous masses has often been quoted as an indication that they are the result of tissue degeneration. A similar statement has been made by Neumann in his paper on "Fibrinoid Degeneration." The fallacy of this view I believe I have been able to demonstrate in my own researches on "Fibrinous Exudates." In these investigations it became apparent that hyaline change in fibrin was only the result of age or a change associated with its organization by connective tissue.

The effect of tissue cells in producing thrombosis, when as foreign bodies they find their way into the circulation, is well known. As thrombosis does not always occur, we may

assume that their mere presence is not sufficient to produce coagulation, and that another element—in this case degeneration of the protoplasm with production of a fibrin ferment—is necessary to the production of fibrin. The classical experiments of Alexander Schmidt and Rechenbach bear directly on this point.

Schmorl, who first called attention to the presence of emboli of placental giant cells in the lungs, found the same not only to have caused thrombosis in their immediate neighborhood, but in various organs, notably the brain and liver, he found thrombi composed of hyaline masses, and ascribed their production to some ferment which had found its way into the circulation. This supposition of Schmorl's has received brilliant confirmation through the experiments of Foà and Pella-cani, who injected emulsions prepared from various organs, and through similar experiments by Lubarsch, who used liver cells in the production of his injecting fluids. All of these observers were able to produce widespread thrombosis in the vessels. Schmorl was also able to produce thrombosis, though not extensively, by the injection of a solution prepared from placental cells. Of still more recent and convincing character in this regard are the observations of Maximow.¹ Maximow found, surrounding the emboli of parenchymatous cells, thrombosis. Besides the thrombi immediately surrounding the emboli he found thrombi in which only cell detritus could be seen, and again extensive thrombi in which no cells were present. As the nature of his experiments was such that fragments of already degenerated placental cells and their products almost certainly found their way into the circulation, he concluded that these simple thrombi owed their production to this cause. His description of the fibrin found (page 315) is most interesting. He says: "The rest of the thrombus consists principally of hyaline masses and light granular collections of blood plates." I find in this a confirmation of a similar observation which I have reported in my paper above mentioned,² in which I found hyaline masses of fibrin in the middle of a thrombus. A supposition that here tissue degeneration plays any part in the production of these masses, any more than that it forms the necessary ferment, is to be rejected. As placental cells

¹ "Zur Lehre von der Parenchymzellenembolie der Lungenarterie." Virchow's Archiv., Bd. cli.

² "Fibrinous Exudates and Fibrinoid Degeneration." Journal of Ex. Med., vol. iii., 1898.

which are not the seat of degeneration do not produce coagulation, we may assume that the degeneration is the deciding factor.¹ Applying this knowledge to the canalized fibrin of the placenta, there seems to me to be no reason to suppose that the fibrin found on the surface of and in the invading areas of degenerated epithelium on the villi is formed in any other way than that just mentioned in connection with emboli of these cells. Further than this, the disproportionate amount of fibrin to the number of degenerated cells in the placenta precludes the possibility of a direct metamorphosis of cell protoplasm into fibrin. The masses often found attached by a small base to a few degenerated cells, but spreading in cloud-like form into the blood spaces, express very clearly the action of a ferment. The broad layer of fibrin found on the serotina, the fibrin layer of Nitabuch, is also of such a character as to preclude its formation by a direct metamorphosis of protoplasm. *If we accept this explanation of the cause of fibrinous deposits in the placenta, we remove the points of discrepancy between the observations of Minot and others who found the fibrin intimately associated with degeneration of the epithelium, and the more recent researches which tend to disprove the existence of a true degeneration of protoplasm into fibrin.*

The more recent experiments of the physiologists are also in harmony with these conclusions. I myself can find no evidence in the oft-quoted fibrin of the placenta which tends to strengthen a theory of fibrinoid degeneration. On the contrary, there are many facts to show that degeneration furnishes only materials necessary to the processes of coagulation, and that the blood plasma is still a necessary element in the production of fibrin. This explanation of fibrinous deposits associated with tissue degeneration I should apply to diphtheritic membranes. Here, however, the case is somewhat different, as the destruction of tissue must be sufficient to cause exudation from the capillaries, which is immediately followed by coagulation both in the tissue and on the surface in form of a deposit.

Decidua.—There is little doubt at present among embryologists that the decidua is derived from the connective tissue of the uterine wall (Meier, Leopold, Minot, and more recently

¹ Mallory has recently added another form of cells which after degeneration form thromboses in the blood vessels—i.e., the large phagocytic cells found in the blood of typhoid-fever patients.

G. Klein). Various observers have, however, advocated other theories, among which might be mentioned that of Hennig, Langhans, and others, which considered the decidual cells to be formed from leucocytes. Still others believed them derived from the uterine epithelium (Overbach), from the epithelium of the villi (Kastschenko), and, lastly, the theory of Ercolani that the decidual cells are derivatives of the vascular endothelium. The observations of Ercolani are of the greatest interest. Ercolani found in the decidua two elements: First, what he and others, including Minot, called young decidua cells. These cells are characterized by a nucleus rich in chromatin and a protoplasm taking a deeper stain than the true decidua cells. Minot found these cells richly scattered through the decidua compacta. The illustration which he gives of them (page 418, cut 30) shows the deeply stained nuclei and granular protoplasm. Their form is of the most varied character, showing processes and elongations, and suggest very strongly the appearance of wandering cells. The similarity is so striking as to suggest at once a connection between these cells and the wandering epithelial cells of Marchand found in hydatidiform mole, and the same forms described by Aschoff in the normal placenta. Ercolani found these cells arranged around the blood vessels and believed that they were newly formed. Minot's criticisms of Ercolani's observations are important as showing the identity of these forms. I quote from page 430 of his monograph on "Uterus and Embryo": "Ercolani erroneously regarded the decidual cells as a new formation arising after the total destruction of the mucosa. He observed the degenerative processes of the uterine epithelium and the arrangement of the decidual cells around the vessels of the placenta in rodents and mammals; he inferred that the whole mucosa was degenerated and lost, but he never established the inference by observation. He also inferred that the perivascular cells, being different from the surrounding tissue, were a new formation, but he never traced the actual genesis of the cells."

There seems little doubt that the cells which Ercolani observed and which Minot accepted as decidual cells were, from their character and distribution, the wandering chorion cells of Aschoff and Marchand. Unfortunately Minot gives no special description of the cells Ercolani found, other than that they were different from the surrounding decidua. His description and illustration of "young decidua cells" is certainly strikingly

characteristic of the chorionic forms. His statement that the cells of Ercolani were different from the surrounding tissue, which must have consisted of true decidua, and his acceptance of them as decidual cells, make but one supposition possible, *i.e.*, that they belonged to the form which he has described as young decidual elements. If this inference is correct, we may add the evidence furnished by their distribution in identifying them with the wandering cells of the chorion.

The illustration of Minot is taken from a section through the compacta. Minot does not speak of the absence or presence of these cells in the decidua vera or whether they penetrated into the blood vessels. I believe, however, that whatever the significance of these cells, they are the forms described by Aschoff and Marchand.

Regarding the formation of the true decidual cells—*i.e.*, the large oval, spindle, and other forms—the evidence of their derivation from the connective tissue seems complete. Of especial interest in this connection are the buds of decidua-like cells found by Schmorl on the peritoneal surface of the uterus and ovaries in pregnant women. Such formations bear a great resemblance to true decidua, but have never contained the so-called young forms. I have examined the specimens of Schmorl, besides several in my own possession, and I fail to find any but the pale nuclear forms of the true decidual cells.

SURGICAL TREATMENT OF PATIENTS AT THE ASYLUM FOR INSANE, LONDON, ONT.

BY

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General Surgery.—In an institution of the size of the London Asylum with its 1,000 mental cripples, there exist, as a matter of course, many cases of physical ailment which demand relief and are amenable only to surgical measures. Under the head of general surgery are included all operations other than gynecological. Of these there have been during the past three and a half years 32. The indications requiring surgical procedure were the presence of tumors (malignant or benign), depressions of the skull, caries of joints, appendicitis, hernias, and so forth.

The cases requiring special mention are the radical cures of hernia, of which there were 21. The prevailing form was inguinal, only one being a femoral. In all but one the Bassini method was followed and with uniform success. The cure of the rupture, which meant the removal of a source of discomfort, gave general satisfaction to these patients, and many of them subsequently so expressed themselves. The post-operative history showed no mental improvement that could be attributed as a result of the operation done.

Gynecological Surgery.—The eradication of pelvic disease among our female insane is the most important advance that we have made in this institution in our methods of treatment. In our work in this department there has been brought to our recognition a serious fact—viz., that perhaps one-sixth, if not one-fourth, of all the women in asylums for insane are there because of the special infirmities of their sex and the disasters and penalties of their lives as wives and mothers. Our investigations and results in gynecological surgery have proved so remedial as to be hardly credited unless actually witnessed. We have already examined 136 women with reference to the presence or absence of disease in any portion of the reproductive system. Out of this number 126 had organic lesions or malformations incompatible with normal genitalia. The 136 women were selected patients out of a total of over 750 female patients under observation since the commencement of this special investigation. The 126 patients in whom gynecic disease was located represent nearly 17 per cent of the total number of female inmates. This large percentage of pelvic disease is almost incredible, especially to those who are accustomed to regard insanity as practically the only malady affecting the insane. But if the brain is the prime seat of mental derangement, it should not be forgotten that it is only one of the organs that enter into the construction of the human machinery. Of these 126 patients there were 121 whose condition necessitated operative procedure for the restoration or amelioration of physical disorders which either caused or complicated disturbance of the nerve centres.

Interrogation of insane patients on symptomatology as an aid to diagnosis was practically valueless. The sexual delusions often portrayed by female patients afforded no help in arriving at a definite conclusion, and usually, when present, were misleading. Ofttimes a patient has referred certain sensations as symptoms induced by the presence of an internal

tumor, which on examination was found to have had only an imaginary existence. Their distorted mental faculties obscure their judgment, and their perverted sensations are erroneously attributed to hypothetical sources.

Observation and question, which are of the greatest importance in determining the origin of ill health in sane women, are utterly unreliable in establishing the presence or absence of any pathological condition of the pelvic organs in their insane sisters. It is a peculiar feature that the greater number of serious ailments discovered in our mentally deranged females were only disclosed by actual examination. Without anesthesia it would have been manifestly impossible to have carried out the various manipulations and instrumentations so absolutely necessary to a systematic examination of the pelvic organism in our asylum patients. The constant use of ether as a general anesthetic has thus far been unattended by any untoward effects. The insensitive condition induced by its inhalation is, in these patients, rapidly recovered from and is very rarely followed by any nausea or vomiting. Anesthetization for the purpose of examination is troublesome, but an examination of the insane without its aid is valueless.

A full analysis of the pelvic disease in the 121 operable cases would not be possible in this paper. A summary, however, of the various lesions diagnosed will give an approximation of their relative frequency.

Diseases of the uterus numbered 200, and are subdivided into:

1. Endometritis.....	67 cases
2. Subinvolution	71 "
3. Retroversion	40 "
4. Dysmenorrhea and menorrhagia	16 "
5. Complete procidentia.....	6 "

Diseases of the cervix uteri totalled 84, and were as follows:

1. Hypertrophy.	26 cases.
2. Lacerated	36 "
3. Cystic.....	19 "
4. Polypi.....	3 "

Of tumors of the uterus there were 10, and these were classified into:

1. Fibroid.....	8 cases.
2. Epithelioma	1 case.
3. Sarcoma.	1 "

Diseases of the ovaries and tubes, including cysts of all kinds, numbered 19.

Injuries to the vagina, including fistulae, were 28.

These made a grand total of 341 gynecological diseases in 121 patients, which is apparently a large number; but many patients had more than one primary or secondary lesion.

The following observations apply to 110 cases, comprising the total number operated upon, exclusive of a number of cases too recent to be presented in this report.

In the treatment of what is professionally termed diseases of women, gynecologists, like other specialists, differ as to methods. Many gynecological procedures adopted as standards by the majority of physicians are useless or inapplicable when applied to the insane. The employment of ovarian or uterine medication, the application of the Apostoli method for the reduction of fibroid tumors, and the introduction of pessaries for displaced uteri and adnexa could not be applied with even a fair modicum of success. The restlessness, meddlesomeness, and lack of control inherent in the insane would make medication a task laborious to the operator and likely to arouse an antagonism in the patient because of the necessity of its frequent repetition. The questionable potency of the electrical or Apostoli treatment and the difficulty of its manipulation prevented its adoption where apparently indicated.

The different mechanical devices or pessaries for the support of corrected displacements of the uterus were given a fair trial, but had to be abandoned. These patients would not tolerate their presence in the vagina, and would remove them soon after they were introduced. These were some of the difficulties that rendered unavailing recognized but tedious methods which in the main are only palliative even under the most favorable conditions.

The only radical treatment for the insane, as for the sane, with gross gynecic lesions, we believed to be that afforded by the resources of recent surgical science. Thorough preparation of surgical dressings, scrupulous attention in the observance of aseptic details, and a familiar knowledge of the technique involved in the various operations, now render the most critical surgical operations comparatively free from hazard to the patient's life.

Since our recourse to surgical aid three and a half years ago 110 women have undergone operative treatment, representing 196 distinct operations. These embraced 83 curettages, 38 trachelorrhaphies and amputations of the cervix, 26 operations for suspension of the uterus, 12 ovariectomies, 17 hysterectomies,

2 laparatomies for tubercular peritonitis, 1 celiotomy for removal of a broad-ligament hematoma, and 17 perineorrhaphies.

These operations were done primarily and specifically for the removal of physical disease and the promotion of bodily comfort. The finale of medical, dietetic, and hygienic measures in the general management of lunatics by all alienists is to bring the physique to the highest attainable point. If it is shown that surgical art can aid medical science in promoting this desideratum even among the insane, it should be added to the armamentarium of all hospitals devoted to the care of these wards of the State. Furthermore, if it is admitted that by surgical means sources of exhaustion, worry, pain, and misery can be eradicated and a state of good bodily health established, is it not reasonable to argue that mental improvement or recovery may result as a sequence to the restoration of the system to physical well-being? We maintain that our results thus far warrant us in urging asylum authorities to test the effects of the removal of operable gynecological diseases among the insane.

Results.—For the purpose of simplifying the classification of the 110 gynecological cases and giving their present mental condition in brief, the main operation done in each patient will determine her classification in the accompanying table.

1. Of the 12 ovariectomies done 7 recovered, 4 improved, and 1 died on the twelfth day from a pneumonic complication.

2. Out of 17 hysterectomies, of which 9 were vaginal and 8 abdominal, there recovered 5, 3 improved, and 2 died—1 on the third day after operation from exhaustion, and the other on the seventeenth day from exhaustion following hemorrhage brought about by patient tearing out ligatures on fourteenth day.

3. The replacement of dislocated uterus was the operative treatment in 22 cases, either by the Alexander method or ventrofixation. Only 4 of this number have as yet recovered mentally, although 11 others have shown a more or less mental improvement.

4. There were 30 cases in which the chief operation done was the removal of diseased cervixes. Of these, 12 are now well mentally, and 9 others have improved—a most gratifying record.

5. Of 21 cases in which minor uterine disease was removed, usually by curetting, there recovered 12, and 2 improved—also a most satisfactory showing.

6. The remaining 8 cases embraced operations for vaginal lesions, fistulæ, etc. No mental recovery followed in any of these cases, and in only 3 was there any improvement observed.

Reckoning the 110 cases together, it follows that 40, or over 36 per cent, were restored mentally; 32, or 29 per cent, showed an improved mental status; while in 35, or 32 per cent, the mental condition remained stationary, and 3, or less than 3 per cent, died within a month succeeding operation. It is due to us to state that no death has occurred from any operation during the past two years, during which period the last 76 gynecological operations were done. I am also positive in stating that a number of those operated upon would inevitably have died were it not for the timely restoration afforded by the operation. Our improved results during the past two years were no doubt due to increasing efficiency of treatment gained by experience, and especially a better knowledge of the most effective post-operative management of our cases.

A detailed though concise presentation of a few cases, with the mental history prior and subsequent to operation, will sufficiently exemplify the general effects of the treatment employed:

J. E. W.—Puerperal mania of seven months' duration. Forced alimentation had to be maintained for months previous to, and for two weeks subsequent to, operation. Had a delusion that if she ate any food she would immediately be decapitated. Examination revealed a flabby, atonic, subinvolted uterus with pronounced endometritis. Thorough curettage was followed by mental recovery in three weeks. Has now remained well over two years.

A. S.—Chronic mania of two years' standing. Strong and apparently healthy. Future mental recovery doubtful. Examination showed an extensive hypertrophy with a deep bilateral laceration, complicated by a large, subinvolted uterus. Repair of the cervix and curettage of the uterus were done. She went home quite well in two months, and has remained so for two and a half years.

M. F.—Chronic mania of two years. Diagnosed a retroverted, subinvolted uterus. Curettage of uterus and replacing it in a normal position by Alexander's method. She improved slowly and has now fully recovered. A recent letter states that she remains well and is managing her own household affairs, now nearly two years after operation.

C. S.—History since puberty pointed to disturbed menstrual periods. As she grew older she became steadily worse. At time of operation she was 26 years old and had been declared a lunatic for five years, the last four of which were spent in an asylum. When transferred to the London Asylum for special

examination the case appeared to be absolutely hopeless. Diagnosis was made of an enlarged left ovary as big as an orange, which subsequently proved to be mainly cystic with a small amount of fibroid stroma; and the right ovary, although small, was found adherent to intestines. Uterus was small, being undeveloped. Ovaries were removed and patient made a rapid physical recovery. For two months there was no change in her mental condition, being at times excited, destructive, and violent. At the end of two months she became suddenly well, and has been so for sixteen months. She has menstruated regularly since the operation, without the slightest discomfort. She has been at home for a year, and has taken her place once more in the household and society.

A. F.—Was a remarkable case. She was picked up on the G. T. R. station platform, London, wandering around aimlessly; could give no account of herself nor answer any question satisfactorily. Her mental condition was of a subacute or incomplete form of psychocoma. After being a patient for two months and no improvement apparent, she was examined. Both ovaries were large and diseased, and with uterus and tubes were prolapsed and adherent. Both ovaries and tubes were removed and uterus suspended to abdominal wall. For the succeeding two days she was very excited, but woke up from sleep in the morning of the third day perfectly well. She gave us a complete history of herself and location of her friends and children (she being a widow) in Pennsylvania, where she returned after being under observation for six months, during which time she remained mentally and physically well.

L. S.—A case of chronic mania of erratic mental history for sixteen years. She is now 32 years of age. Always worse at menstrual periods. Examination disclosed a pelvic mass with very little mobility. On opening into the abdomen it was found that all the pelvic organs were bound together to the intestines by old, strong adhesions. The only operation offering any chance of success was a complete hysterectomy. This was done. Ovaries were several times larger than normal and fibrocystic in character. A good physical recovery followed. She is still under observation, although quite well mentally since the operation on the 11th of January.

F. W. T.—Delusional mania of five years' duration. Had been an asylum resident for two years. During the summer of 1896 attention was drawn to an increasing abdominal protuberance. Examination disclosed a rapidly growing, fluctuating tumor. After a delay of some weeks, consent to operation being given, the tumor and uterus, adherent to each other, were removed. The contents of tumor proved to be three-quarters fluid and one-quarter solid, irregular mass papillomatous in character. After a week's excitement she quieted down, gained rapidly in flesh, and was taken away by her friends in December last. She is now discharged, and her friends state she is very well, mentally and physically.

When reflecting on the results which were attained in the 110 female lunatics, one cannot but be impressed by the remarkable manifestations that followed the extirpation of diseased sections of the reproductive system in a number of the cases. The almost instantaneous resolution of the mental faculties in some, and the steady evolution of the normal cerebral functions in others, cannot but afford incontrovertible evidence in support of the relation of physical cause to mental effect. Proof of the interdependence of the brain upon the rest of the body, and especially on the organism concerned in the genesis of the human species, can be fairly demonstrated by the study of ordinary physiological functions. Witness the mental attitude of females during the development, continuance of active life, and decadence of the sexual system. That their varying moods and hysterical phases are often exhibited during these periods is current knowledge to all medical practitioners. Is it not reasonable to assume that if these delicate and complex organs are so commonly disturbed by periodical physiological causes, the implantation of pathological conditions upon these causes must in no usual degree disturb the mental equilibrium, especially in those predisposed to mental weakness? The validity of this inference is practically established, in our experience, by the good mental results that followed the removal of gross pelvic lesions.

And, further, our experience in this special work brings out this important fact, that the elimination of certain forms of utero ovarian disease was usually succeeded by either a return to a normal mental state or a marked improvement in the mental condition. Also, that there are derangements of these same organs which, when rectified, have little if any influence on the mentality of the insane, although the physical health may be immensely bettered. For etiological purposes we may classify our cases into *inflammatory* and *non-inflammatory* cases, the former consisting of diseases of the ovary and uterus arising from inflammation; the second, or the non-inflammatory group, embracing dislocated uteri, accidental tears of the vagina, and new growths.

In the inflammatory group of 63 cases, made up of 12 celiotomies for chronic ovaritis, 30 amputations for hypertrophied cervixes, and 21 curettages for endometritis, there was a mental recovery rate of over 49 per cent over and above 23 per cent who improved.

The non-inflammatory or mechanical group of 47 cases

included 17 hysterectomies for the removal of uterine tumors and complete procidentia, 22 replacements of dislocated uteri, and 8 cases of repair of vaginal tears. The subsequent history of these 47 cases gave a recovery rate of only 19 per cent, and 36 per cent in whom was noted any improvement. It should be stated in this connection that some of the recoveries following hysterectomy had chronic ovaritis in addition to the lesion for which hysterectomy was done.

Two explanations may be offered as a solution of the problem why inflammatory diseases of the uterus and its adnexa are such potent etiological factors in exciting mental alienation in females. The first may be termed:

The Reflex Theory.—The innervation of all the pelvic organs is supplied from the same plexus, that of the inferior hypogastric, possibly the most important of all the nerve plexuses, controlling, as it does, the delicate and complex organic mechanisms charged with the reproduction of the human species. The continual disturbances of these lower nerve centres incidental to inflammatory deposits must react upon the higher, begetting in some the delusional manifestations which determine mental alienation. The second:

The Internal-Secretion Theory.—In the recent physiological theory of internal secretion we may find the true solution of the deleterious effects that diseased sexual organs exercise upon the distant seat of reason. Some physiologists claim “there is a normal and constant contribution of specific material by the reproductive glands to the blood or lymph and then to the whole body.”¹ Shaefer² says on internal secretion “that these [the generative glands] react upon the rest of the organism through the nervous system.” Applying this hypothesis to pathological conditions of these same organs, is it not fair to conclude that instead of, as in health, the contribution of this normal attribute of probably great power in the induction of nerve force, there is precipitated into the general circulation an abnormal noxious element, distributing its virus throughout the patient’s economy?

The introduction of these diluents of unknown virulence, invading the inmost recesses of the higher nerve centres, may engender an abnormal functionality in females possessing delicately poised minds. In the removal of these diseased organs, or by appropriate surgical measures directed to dis-

¹ American Text Book of Physiology, Ed. 1896, p. 901.

² Physiology, Ed. 1898, p. 937.

eased sections, we can eliminate these sources of mental toxemia. These causative factors being removed, the natural forces will gradually reassert themselves in re-establishing the prior state of sanity. The theories enunciated are possible interpretations of the positive relations that certain pelvic diseases bear to sanity. If, in our experience, one-third of the gynecological cases recovered mentally and another third improved, such results support Prof. Michael Foster's statement in his address before the British Science Association in Toronto last August, "that this, at least, stares us in the face, that changes in what we call the body bring about changes in what we call the mind. When we alter the one we alter the other."

We are not the only physicians in Canada who have had brought home to them by actual experience the relationship that exists between diseases of the organs of reproduction and mental derangements. Several independent observers have already placed on record sundry such cases that have occurred in their own private practice. Notable among these I take the liberty of mentioning Dr. Holmes, of Chatham, who in his thirty years of practice had as many as twenty-four mental recoveries succeeding operations of this character.

Dr. Ernest Hall, of Victoria, B. C., not long ago examined a female patient in the asylum of that province who was suspected of having some lesion in the pelvis. Dr. Hall, who recommended operation, removed two fibrocystic and adherent ovaries. The patient made a rapid recovery, both physically and mentally, and is now once more attending to her household duties after a residence of two years and eight months in an asylum as an apparently chronic, hopeless lunatic.

Dr. Burgess, superintendent of the Protestant Hospital for Insane, Montreal, reports having had to send three of his female patients to the Montreal General Hospital to be operated upon for utero-ovarian disease. All three patients were restored to mental and physical health as a sequence of the operation. Two of these cases and the one reported by Dr. Hall had fibrocystic disease of the ovaries similar to that described in my own ovarian cases, and they afford certainly strong additional evidence of the causative relation of pelvic to mental disease.

In conclusion I wish to say that I have no desire to unduly magnify the value of surgery as a mode of treatment among the insane, nor do I assume that all the mental recoveries succeeding operation were due solely to its influence. I must

emphatically state, however, that many of those who recovered their reason would not have done so without surgical interference. To hope to relieve these poor sufferers from both physical and mental derangement by simple incarceration and the well-nigh useless adjuncts of ordinary treatment, and to refuse these unfortunates the advantages which medical science offers to other women, is to reject the aids of modern science, to follow the methods of medievalism, and to prefer to a modern hospital for the insane an old-time eighteenth-century mad-house.

DIPHTHERIA OF THE VULVA.¹

BY

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EVERY one who has seen many autopsies upon women dead of puerperal infection knows that it is not uncommon to find the interior of the uterus and frequently the vaginal walls, covered with a dirty grayish or yellowish membrane of varying thickness, which is more or less adherent, and which leaves a bleeding or granulating surface after its removal. It is also well known that tears about the vulva, vagina, or cervix which do not do well frequently become covered by a similar membrane. This condition has long been described as diphtheritic, and it is impossible to read any of the older books upon pathology or obstetrics without finding frequent mention of diphtheritic endometritis, diphtheritic ulcers of the vagina, perineum, or what not. Bacteriological research has shown us, however, that the great majority of these cases are not diphtheritic at all, but are due to superficial necrosis produced by the streptococcus, either alone or in combination with other organisms, which are usually saprophytes.

Thus it was in this so-called diphtheritic endometritis that Waldeyer,² twenty-five years ago, first demonstrated the presence of round bacteria arranged in chains, which we now know as streptococci.

¹ Read before the Clinical Society of Baltimore, May 14, 1897.

² Waldeyer: Ueber das Vorkommen von Bakterien bei der diphtheritischen Form des Puerperalfiebers. Arch. für Gyn., iii., 293, 1872.

The researches of Widal¹ in France and Bumm² in Germany have conclusively demonstrated that streptococcic infection may lead to the formation of a pseudo-diphtheritic membrane in any part of the genital canal, and that nearly all the cases of so-called puerperal diphtheria are due to its action. Bumm³ has also shown that there is a difference between the histological structure of the true and pseudo-diphtheritic membranes, the former being composed of fibrin which stains characteristically with Weigert's stain, while the latter is composed of necrotic material in which the outlines of the cells may be still made out, but which contains little if any fibrin. Bumm's² researches have been confirmed by every one who has studied the histology of puerperal infection, and there is no doubt that the vast majority of the so-called cases of puerperal diphtheria have nothing to do with true diphtheria.

Therefore, at the present time, we are not justified in speaking of puerperal diphtheria, unless we have demonstrated the presence of diphtheria bacilli in the membranes. And we must even regard with scepticism those cases in which the presence of diphtheria in the throat renders it likely that the genital process is of the same nature; for it is quite conceivable that a woman with ordinary puerperal infection may have true diphtheria in some other part of the body as an accidental complication.

As far as I can learn, only two cases have as yet been described which fulfil these conditions, namely, the cases of Nisot,⁴ of Brussels, and Bumm,³ of Basel, both of which were published last year. In both typical diphtheria bacilli were found in the membrane and cultivated from it, and both cases were treated with antitoxin and recovered. In Bumm's case the entire vagina was covered by the membrane, and so sure was he of its streptococcic origin that he refused to give the patient antitoxin until the bacteriological examination revealed the presence of diphtheria bacilli.

It is more than probable that two cases reported by Brink-

¹ Widal: Infection puerpérale et Phlegmasia alba dolens. *Gaz. des Hôpitaux*, 1889, 565.

² Bumm: Histologische Untersuchungen über die Puerperale Endometritis. *Arch. für Gyn.*, xl., 398, 1891.

³ Bumm: Ueber Diphtherie und Kindbettfieber. *Zeit. für Geb. und Gyn.*, xxxiii, 126, 1895.

⁴ Nisot: Diphtérie vagino-utérine puerpérale. Séro-thérapie. Guérison. *Bulletin de la Soc. belge de Gyn. et d'Obst. Bruxelles*, iii., 3, 1896.

mann¹ were true diphtheria, though bacteriological examinations were not made. In one of them, the patient on the third day of the puerperium took her child, which was suffering from diphtheria, into her own bed, and two days later her vagina and vulva were covered by a diphtheritic membrane. Diphtheria bacilli were found in the child's throat, but were not looked for in the membranes about the mother's genitals; both were treated with antitoxin and both recovered. In his second case the woman was delivered by a midwife; the third day afterward she got up to look after a sick pig, and two days later had high fever. On examination he found "diphtheria" of the vagina, with dulness in the left parametrium, while Douglas' cul-de-sac and the uterus were very sensitive. Antitoxin was given; the vaginal membrane disappeared the next day, but the fever continued, and the woman died from sepsis on the fifteenth day after confinement. In this case no bacteriological examination was made, and the disappearance of the membrane under antitoxin is not enough to establish its diphtheritic nature or to prove that it was not a manifestation of the sepsis from which the patient died.

Within the last few months I saw, in consultation with a medical friend in the country near Baltimore, a case of diphtheria of the vulva in which the Klebs-Löffler bacillus was positively demonstrated, and which I wish to bring to your attention this evening.

Mrs. K., German, age 20. The first labor, eighteen months ago, was ended with forceps. The present labor occurred February 20, 1897, and was very easy, the child being born with four or five expulsive pains. The patient was seen daily by her physician for the first five days of the puerperium, which was absolutely uneventful. She got up on the fifth day (February 24, 1897) and did perfectly for the next week, according to her own statements; but on the twelfth day (March 4, 1897) she began to complain of pain and a sense of swelling about the vulva, which increased in severity and caused her to recall her physician on the fourteenth day of the puerperium (March 6, 1897), at which time he did not make an examination, but advised the use of warm applications, which relieved the pain and markedly increased the lochial discharge. On the following day she was unable to urinate, and when she was catheterized the physician noticed that the vulva was

¹ Brinkmann: Zwei Fälle von Scheidendiphtherie mit Behring's Heilserum behandelt. Deutsche Med. Wochenschrift, xxii., 384, 1896.

markedly swollen and its inner surface covered by a grayish-white exudate. For the following week her condition remained about the same with some fever and a somewhat rapid pulse, but at no time were alarming symptoms noticed.

The death of both the children from diphtheria during the week caused the physician to suspect that the vulval exudate was likewise diphtheritic in origin, and to ask me to see the patient with him on March 15, or the twenty-third day of the puerperium, when I found the following condition: A well-nourished woman, in filthy surroundings, with a normal temperature and pulse of 100. Her only complaint was of burning on passing water and a sense of soreness about the genitals when she sat up in bed. Examination showed the inguinal glands on both sides enlarged and sensitive. The entire vulva was red, hard, and greatly swollen, and covered with a profuse, dirty yellow discharge. In spreading apart the vulva it was seen that the swelling was limited to the labia majora and the left labium minus, while the right labium minus was of the usual size. The entire inner surface of both labia majora and minora was covered by a grayish-white, firmly adherent membrane, one to one and a half millimetres thick, which was densely adherent and left a raw, bleeding surface when removed by dissecting forceps. The introduction of a speculum was very painful, and showed that the membrane extended only a short distance up the vagina, the greater part of the vaginal walls presenting a normal appearance when the yellowish discharge covering them had been wiped off. The uterus was well involuted, and the tube and ovaries appeared to be normal. The examination of the throat and thoracic organs was negative. Cover slips were made from the membrane on the inner surface of the labia minora, and blood-serum tubes inoculated. The examination of the cover slips showed typical Klebs-Löffler bacilli; and the serum tube, after twenty-four hours in the thermostat, showed a profuse growth of small, round, elevated, transparent colonies, which upon examination were found to be a pure culture of the bacillus diphtheriæ. The same day one cubic centimetre of a bouillon suspension of the growth upon the serum tubes was injected beneath the skin of a guinea-pig. Several days later an abscess had formed at the seat of injection, with marked induration, and several days later the animal died. At autopsy the pus from the abscess contained cocci but no diphtheria bacilli. Cultures from the various organs were sterile, but the examination of hardened

sections of the liver revealed the presence of many small necrotic areas, especially in the periportal areas.

Upon my advice the patient was given 2,000 units of Mulford's antitoxin and the genitals kept clean with a boracic acid solution. This was followed by the rapid disappearance of the membrane, and ten days later I was informed that all trace of the disease had disappeared. Several weeks later more or less paralysis of both legs made its appearance, which gradually improved under appropriate treatment, and thus doubly confirmed the diagnosis of diphtheria.

It would appear, from the statements of the physician in charge, that the mother was probably infected by him and the children from her. He stated that he had several cases of malignant diphtheria under his care at the time the patient was confined, but that he had disinfected his hands most carefully with bichloride before examining her, and could hardly believe that he had infected her. It is more than likely that the disease had existed some time before the patient called attention to it, as she was an ignorant German, who lived in the second story of a building whose first floor was used as a stable, and whose surroundings indicated a comparative indifference to filth.

The first trace of disease in the children was observed several days after the appearance of symptoms about the mother's vulva, when the newly-born child was observed to be very restless. When the physician saw it, it had pharyngeal diphtheria, and gradually became worse and died from laryngeal stenosis, notwithstanding the use of antitoxin. It is more than probable that the child contracted the disease from its mother, as they both slept in the same bed; and it is also probable that the older child contracted the disease from the baby, as no symptoms appeared in it until the baby was quite ill. A possible mode of infection may be found in the fact that the rubber nipple of the older child was frequently given to the baby to quiet it.

This case is of considerable interest, as it is apparently the first instance in this country in which the diphtheritic nature of such affections has been conclusively demonstrated by bacteriological examination and treated with antitoxin, and fully confirms the observations of Nisot¹ and Bumm.² It also teaches us the practical value of a bacteriological examination in such cases as the only reliable means of distinguishing between true and pseudo-diphtheritic membranes forming during the puer-

¹ Nisot: *Loc. cit.*

² Bumm: *Zeit. für Geb. u. Gyn.*, xxxiii., 126, 1895

perium, and of determining the proper method of treatment. It is also of interest from a practical standpoint, as it illustrates very forcibly the danger to which a physician exposes his patients when he attempts to attend obstetrical and diphtheritic cases at the same time, no matter how carefully he may attempt to disinfect his hands.

NOTE.—As the cases reported by Longyear, "Puerperal Diphtheria," *AMERICAN JOURNAL OF OBSTETRICS*, xxxvi., p. 489, 1897, and Haultain, "Puerperal Diphtheria," *Lancet*, June 26, 1897, had not been published when this article was read, they are not mentioned in it.

A CASE OF PUERPERAL INFECTION IN WHICH THE BACILLUS TYPHOSUS WAS FOUND IN THE UTERUS.

BY

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(With chart).

THE prevailing interest at the present time as to the action of the bacillus typhosus outside of the intestine, together with the fact that, after a careful search through the literature on puerperal sepsis and typhoid fever, we have failed to find a single instance in which this organism has been found in the puerperal uterus, have led us to report the following case, which, although we do not claim it as a true example of typhoid puerperal infection, yet in many points is so suggestive of such a condition that we think it should at least be put on record.

Since the work of Pasteur⁴² in 1880, who first was able to cultivate the streptococcus pyogenes from the lochia of a woman suffering with puerperal fever, much work on the bacteriology of this disease has been done. And besides the common forms of infection due to the streptococcus and staphylococcus, other forms have been described to which a number of other bacteria stand in definite causal relation. Thus, Von Franqué⁵⁵ in 1893 reported the first case of puerperal infection due to the bacillus coli communis; and Williams,⁵⁹ in an article published shortly after Von Franqué's work, stated that he was of the opinion, on account of the close proximity of the genital canal to the anus, that if this organism were more generally looked for it would be more often found. Since then

this organism has been repeatedly demonstrated, both in pure culture and in combination with others, by various observers, among whom may be mentioned Gaultier,¹⁹ Gebhard,²⁰ Rendu,⁴⁵ and Winckel.⁵⁷ Such infections, when uncomplicated, usually run a mild course and rarely terminate fatally.

The gonococcus has been repeatedly demonstrated as being the cause of temperature during the puerperium, and may be considered as the only example of autoinfection with which we meet. This subject has been thoroughly worked up by Krönig,²⁷ Leopold,³⁰ Mastovsky,³⁵ Neumann,³⁹ and Von Franqué.⁵⁵

Heyse²⁴ reports the case of a woman delivered by forceps, followed by manual extraction of the placenta, who developed a typical case of tetanus seven days after delivery. She died three days later, and he was able to demonstrate the bacillus of tetanus in the cervical secretion during life and also in the dust obtained from the cracks in the floor of her room. And in the last year Rubeska⁴⁸ reports six fatal cases of puerperal tetanus, from four of which he was able to isolate the organism. A considerable number of cases of clinical puerperal tetanus have been reported, but they, being without bacteriological examination (except a case of Walko⁵⁶ in which, although a careful bacteriological study was made, the organism could not be grown), are not available for our purpose.

The bacillus of diphtheria has been found in the puerperal uterus and in the membrane of diphtheritic puerperal vaginitis by Bumm,² Nisot,⁴⁰ and Williams.⁶⁰

Czemetschka⁶ and Schuhl⁴⁹ report cases in which the diplococcus pneumoniae of Fränkel has been found, and Doléris and Bourges report a case of pelvic abscess in which they found the proteus vulgaris and streptococcus pyogenes, and have proved by animal experiments that the combination of these two organisms is more virulent than either alone.

Recently attention has been directed to the condition known as physometra, or tympania uteri, which is now generally considered to be due to infection with some gas-producing organism rather than to the introduction of atmospheric air during intrauterine manipulations. Opinion is not as yet unanimous as regards the organism which produces this condition. Thus, Gebhard,²⁰ in twenty-five cases of physometra, isolated the bacillus coli communis, while in cases reported by Doléris,⁸ Krönig,²⁸ Ernst,¹¹ Graham Stewart and Baldwin,²³ and Dobbin⁷ the bacillus aerogenes capsulatus of Welch and Nuttall

has been found. And Lindenthal³¹ in a recent careful research reports five cases of tympania uteri from which he has been able to isolate an anaerobic gas-producing bacillus which, although not identical with, is, he thinks, closely related to the bacillus aerogenes capsulatus.

It is therefore seen that there have been described as occurring in the puerperal uterus and as being etiological factors in the production of puerperal infection the following organisms: streptococcus pyogenes, staphylococcus (aureus and albus), bacillus coli communis, gonococcus, bacillus of tetanus, Klebs-Löffler bacillus of diphtheria, diplococcus pneumoniae of Fränkel, bacillus proteus, bacillus aerogenes capsulatus, and the anaerobic gas-producer of Lindenthal.

As said above, we have been unable to find a case in the literature in which the typhoid bacillus has been found in the puerperal uterus. There is, however, a case reported by Kühnau²⁹ which, although this organism was not found in the uterine cavity, is so similar to our case that we will give a brief abstract of it. He calls his case one of septico-pyemia typhosa. Patient aged 32, admitted to the hospital April 29, 1895. She was then pregnant and had been under observation in the out patient clinic for some time. Her illness began April 20, and labor set in April 26; delivery normal and the child was born alive and healthy. There was marked constipation and she became much worse, having somnolence and delirium one day before admission. On admission her temperature was 39° C. and there was some bronchitis; heart normal; abdomen distended; marked ileo-cecal gurgling; liver not enlarged and the spleen not palpable. There are three to four fluid stools daily; urine bloody (lochia), contains a small amount of albumin, and there is a weak diazo-reaction. She had a continued temperature up to May 6, when a few rose spots were noted and the spleen was barely palpable. Vaginal examination (May 7) showed that the uterus is markedly enlarged, lying in retroflexion on the promontory of the sacrum, involution not good; the external os is still open and easily admits one finger; the vagina and cervical canal are filled with large, foul-smelling clots. Douches and general treatment were given, but she became steadily worse. On May 10 the bacillus typhosus was cultivated from the blood, and from that time she sank rapidly and died on June 17.

At the autopsy the intestinal tract was found to be normal and without any ulceration, the mesenteric glands enlarged and

inflamed, and some of them contain abscesses and sinuosities filled with pus and broken-down tissue, which on cover slips showed the presence of a plump, short, thick bacillus with rounded ends. Spleen is slightly enlarged, its pulp is bluish red, trabeculae hypertrophied and follicles swollen; the same organisms were demonstrated on cover slips as were found in the mesenteric glands. Kidneys the seat of a purulent nephritis, in which the same organisms were found.

Uterus: cavity 7.4 centimetres by 5 centimetres; its walls are 2.3 centimetres thick and rich in blood vessels; the cervix is of a dark red color and is covered by a bloody membrane; the placental site is at the fundus, and here the walls are thicker, 2.7 centimetres. Both parametria are free. Stained sections of the uterine wall at the placental site show no bacilli. The left spermatic vein contains a partially organized thrombus containing some pus.

Bacteriological examination of the pus from the mesenteric glands, kidney abscesses, thrombus in spermatic vein, and spleen gives a short, thick bacillus with rounded ends, presenting the characteristic cultural reactions of the bacillus typhosus. From the clinical history and autopsy Kühnau designates the case as septico-pyemia typhosa and considers that there are two possibilities as to the mode of origin of the infection—either from the uterine cavity or from the intestine.

The case I am about to report presents the following clinical history: A. R., white, Bohemian, age 24, was admitted to the obstetrical service of the Johns Hopkins Hospital November 17, 1897, complaining of fever following confinement. She has been married a year and a half, has had two children and no miscarriages. The first labor was normal and the child is now alive and well; the second child was born five days before admission (November 12, 1897). She was delivered by a midwife, but as she became worse a physician was called in on the second day after delivery. The child lived a day and a half.

Menstruation began when she was 16 years old; has always been regular, lasting a week without pain; her last period occurred in January, 1897.

Past History.—As well as can be made out through an interpreter, the patient has always been a perfectly healthy woman. About a month (?) before admission her husband was ill with a fever (possibly typhoid) and was nursed by the patient until his death. The patient's friends say that up to the time of her

confinement, five days ago, she was perfectly well and about her work.

Present illness began shortly after the birth of her child, which was delivered by a midwife; and the labor was probably somewhat protracted, as the midwife was in the house for two days. On the second day post partum, November 13, a physician was called in, who, finding her with a bronchitis and a temperature of 103° , prescribed for the bronchitis, and did not see her again until the following day, when, the temperature still being elevated, and suspecting the technique of the midwife, he made a vaginal examination, removed a number of clots and pieces of placenta, and douched the uterus with a weak carbolic solution. The next day when he called he found her with a temperature of 103° and no better, and advised that she be brought to the hospital at once.

Examination on Admission.—The patient is a fair-sized, well-nourished woman; color of skin, lips, and mucous membranes good; the tongue is covered with a thick whitish coating and there is a slight herpetic eruption on the lower lip; pulse is 104, of small volume, and somewhat irregular in force and rhythm; temperature 103.1° ; respirations 25 per minute. *Lungs.*—The thorax moves as an entirety; the costal angle normal; palpation shows vocal fremitus diminished, but equal on both sides; both sides of the chest move equally; percussion negative; auscultation shows numerous loud, whistling râles both on inspiration and expiration, which are somewhat increased on coughing; these râles are heard in both lungs, both anteriorly and posteriorly, being most marked in the upper lobes. *Heart.*—At the apex the sounds are clear; embryocardiac rhythm is quite well marked; at the base the second pulmonic sound is heard to be accentuated. *Abdomen*—Above the umbilicus and on the lower thorax there are seen many papules, acnoid in character, of the size of a millet seed to .5 centimetre in diameter; none of them are hemorrhagic, though some simulate rose spots. On palpation the abdomen is slightly tender in its lower zone; no “board-like” hardness; some gurgling in the right iliac fossa and slight tympanites. The fundus of the uterus reaches almost to the umbilicus; it is freely movable and not particularly painful on pressure. *Lymphatic system.*—Negative. *Blood examination* shows no malarial parasites and no leucocytosis.

Before making a vaginal examination Dr. Williams obtained

a quantity of uterine lochia with Döderlein's tube for bacteriological examination. Vaginal examination showed that the cervix was patulous, readily admitting one finger; the body of the uterus was forward, about the size of a small orange, and freely movable; both parametria were free. Intrauterine douche of about four litres of salt solution given.

After the douche the patient's temperature rose to 107° ; this rise was followed by a rapid fall, and in six hours a thermometer in the rectum registered 95° . During this time she was in a state of collapse, and revived only after active stimulation.

November 18, 1897: Patient is in about the same condition as at the last note; her temperature rapidly rises from subnormal to 105° . She has an aggravating cough and spits up a tenacious mucus. Examination of lungs as yesterday; numerous sibilant and piping râles all over chest; percussion gives resonance all over the chest except in the right subscapular region; here there is comparative dullness, but in no way very marked. and on auscultation no tubal breathing can be noted. Abdomen is soft and comparatively painless on pressure; fundus of the uterus palpable above the symphysis pubis. There are a number of small petechiæ all over the abdomen and quite a large denuded surface at the tip of the coccyx, cover slips made at this point showing possible streptococci and other bacteria. Her general appearance is good.

Streptococcus mixed with other organisms having been found in the uterine lochia, at 3 P.M. an injection of ten cubic centimetres of Marmorek's antistreptococcus serum were given. Blood examination shows no malaria. Leucocytes, 8,900.

From the above symptoms—rapid rise and fall of temperature, bacteriologic findings in the lochia, etc.—a diagnosis of pyemia was made.

November 22, 1897: Since the last note the general condition of the patient has remained the same. The temperature has varied from subnormal to 104° . but her pulse and general condition are good. Blood examination has repeatedly shown no malaria and only a slight leucocytosis. Cultures made from blood drawn from the median basilic vein are sterile; Widal reaction positive and gives a marked agglutination up to a 1:100 dilution of serum.

November 27, 1897: For the last three days patient's temperature has been normal and her general condition is much improved. On the external surface of the left leg, just below the knee, there is a painful point, and, although there is neither

swelling nor redness, indistinct fluctuation can be made out on palpation; aspiration at this point gives a thin, purulent fluid, cover slips from which show long chains of streptococci. This abscess was opened and about an ounce of pus evacuated. Cultures from this pus grew out pure streptococcus. Repeated examination of the urine all through the course of the disease shows that until November 26 there has been a marked diazo-reaction, otherwise nothing abnormal.

December 21, 1897: For the last three weeks patient has been convalescent; to-day she is to be discharged. Her general condition is excellent; wound of abscess on left leg almost entirely healed; vaginal examination shows outlet relaxed, uterus somewhat enlarged, in good anteposition, freely movable; both parametria are perfectly free.

The treatment has been largely expectant and stimulating. A single intrauterine douche of sterile salt solution was given after the first examination, but, the nature of the infection being known a few days later, douching was not persisted in. Marmorek's antistreptococcus serum was twice injected, in all thirty cubic centimetres being given. No appreciable effect was noted either in the temperature or in the general course of the disease.

Bacteriological Study of the Uterine Lochia.—A small amount of the uterine lochia was removed in a sterile glass tube and taken to the laboratory for bacteriological examination. The method by which this lochial secretion is obtained is that of Döderlein, and is as follows: The cervix is exposed by means of a Sims speculum and wiped as dry as possible with pledgets of sterile cotton held by sterile forceps, under the direct guidance of the eye a sterile glass tube is passed into the uterine cavity up to the fundus; an aspirator then sucks some of the contained secretion into the lumen of the tube, the ends of which are immediately sealed with burning sealing wax; the tube can now be taken to the laboratory, broken, and culture media inoculated and cover slips made directly from the secretion.

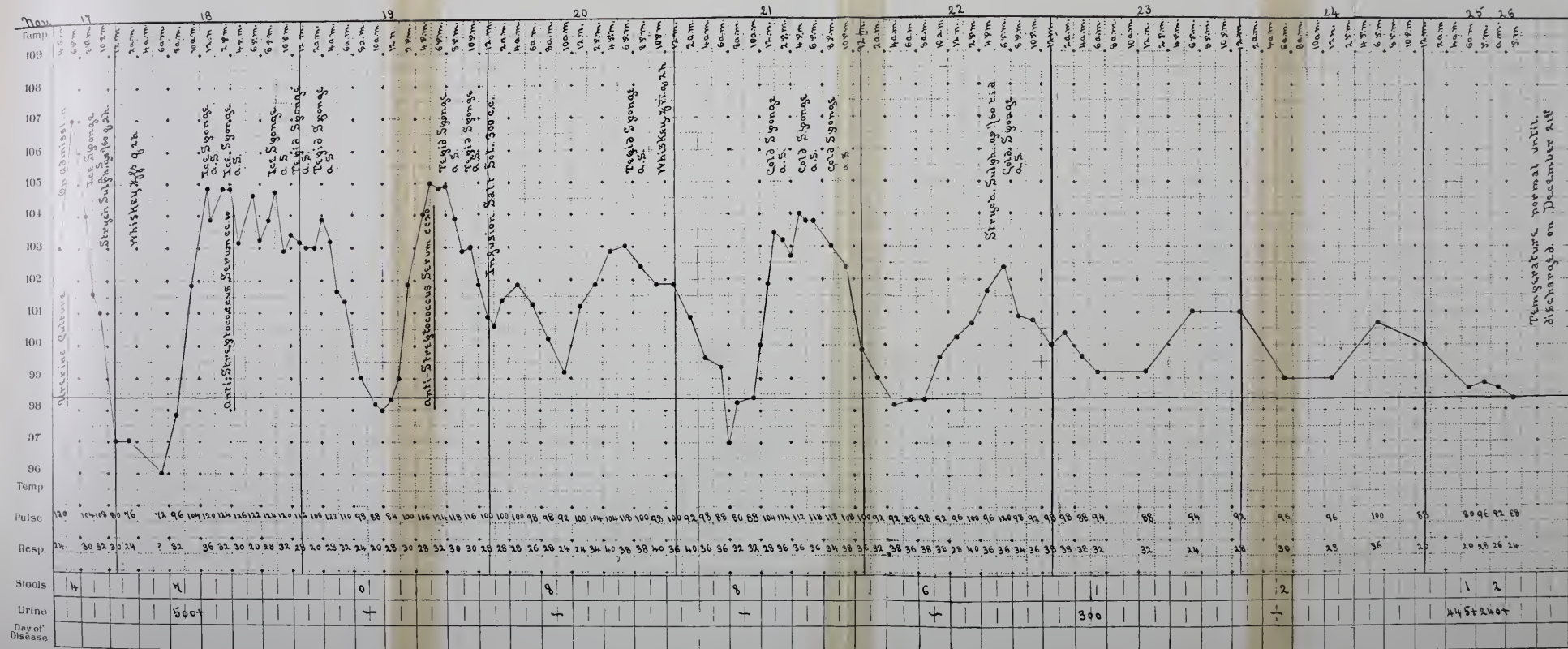
Cover slips made from the secretion of this case showed leucocytes in great abundance, very many diplococci lying in and around the pus cells, some individual cocci, and sometimes short chains of cocci containing three or four organisms; there are also a few short, thick bacilli with rounded ends.

Cultures were at once made on agar plates (three dilutions), glucose-agar plates (two dilutions), anaerobic glucose-agar, and

Löffler's blood serum. On the second day after inoculation, the plates having been kept in the thermostat at 37° C., three varieties of colonies could be differentiated on the agar plates: (1) Small, punctate white colonies, slips from which showed most beautiful chains of streptococci; (2) larger colonies, both deep and on the surface of the media, at first appearing as white, but on standing assuming a distinct yellowish color; slips from these colonies show cocci arranged in groups, typical of the staphylococcus; (3) the third variety of colony appeared in surface growth as a moist, elevated, slightly grayish colony, larger than those showing streptococci and not so large as those showing staphylococci; slips from these colonies showed a short, thick bacillus with rounded ends, which decolorizes readily by the Gram stain.

The anaerobic glucose-agar showed after twenty-four hours' growth: marked gas production and the presence of numerous small, white, deep colonies, which on slips showed a large bacillus with somewhat square ends, which did not decolorize by Gram. This organism was not worked up at once, and two or three days later was found to have died and could not be grown on secondary cultures, although repeated attempts were made. It probably belonged to the group of gas-producing anaerobes, and was killed by its production of acid on sugar media. As it could not be studied as to its cultural peculiarities and pathogenicity, it will not be considered in this report.

The organisms found on the agar plates were carefully studied and proved to be as follows: The first colony gave the cultural and tinctorial reactions in every respect for the streptococcus pyogenes; the second, the same for the staphylococcus pyogenes aureus; and the third organism, the bacillus, proved to be the bacillus typhosus of Eberth-Gaffky and gave the following reactions: a short, thick bacillus with rounded ends, which stains well by the ordinary bacterial stains, gentian violet, methylene blue, and carbol-fuchsin. On young cultures it is actively motile, and it does not stain by the method of Gram. Flagella could be demonstrated as occurring all around the organism by using the tannic-acid mordant of Löffler and staining with carbol-fuchsin. The Widal agglutination test was tried with the serum of a typhoid patient, and found positive up to a dilution of 1:100. With normal blood no agglutination could be obtained with a 1:10 dilution, and, when tried with the blood of the patient herself, positive results were obtained when a 1:100 dilution of the serum was



used. The organism was found to grow well on all the ordinary media at both room and thermostat temperature. On *gelatin plates* the colonies appear after twenty-four hours as small, round, clear points scarcely visible to the naked eye. As the colonies become older they appear under the microscope as having a central dark nucleus, clear periphery, and a somewhat irregular, notched border. With reflected light distinct jagged furrows can be seen running over the surface of the colony. The colony, as a whole, has a brownish, finely granular appearance. On *agar* the growth appears after twenty-four hours as a whitish, somewhat elevated moist line along the line of smear. On *gelatin* slab cultures the growth is white and causes no liquefaction of the medium. *Bouillon* shows a marked diffuse clouding, and on slips many motile bacilli can be seen. *Milk* is rendered slightly acid and is not coagulated. On *potato* there is no visible growth; that the organism is growing, however, can be proven by cover slips. In media containing sugar the organism grows well but produces no gas. Indol production was repeatedly tried with the Dunham peptone solution and found in every case negative.

During the course of the disease cultures were made from the patient's blood and from the metastatic abscess which developed between the muscles of the left leg. In the first instance they proved sterile, and in the second a pure culture of streptococcus was obtained.

The question that now arises is. How did this organism get into the uterine cavity? And in answering it we are met with a number of difficulties. In the first place, the difficulty of obtaining an accurate subjective history of the patient's illness; for, as she and all her friends were Bohemian, it was only after the greatest amount of questioning and interpretation that we were able to obtain what history we have given. Thus we do not know definitely if or if not her husband died of typhoid fever. Although her friends say that she was perfectly well up to the time of her confinement, we have no definite evidence of the fact. The child died on the second day, but this point is also shadowed by some doubt and we know nothing as to the mode of its death. In the second place, the case terminating favorably, we must simply draw our conclusions from the clinical history and bacteriological findings during life, and cannot offer positive or negative proofs from any evidence which might have been found at autopsy.

It seems that there are two possibilities to be considered in the case under discussion. In the first place, the patient, having passed partially through an ordinary attack of typhoid, went into labor as a result of the disease, and the organisms, which were in the blood and possibly in the act of passing across the placental barrier into the fetus, were found in the uterine cavity when some of its secretion was examined bacteriologically. If we consider this possibility we must admit that the presence of the other organisms, staphylococcus and streptococcus, in the uterus are coincident with and in no way dependent on the presence of the bacillus typhosus. The second possible theory is that the patient had not typhoid fever at all, but went into labor in a house in which, only a short time before, her husband had died of the disease, and was probably delivered on the same bed on which he lay when sick. Being treated by a midwife without any knowledge of hand disinfection, she was severely infected both by the streptococcus and staphylococcus and bacillus typhosus, which last organism must have been abundant in her lying-in room. Under this theory the case comes into the category of puerperal infection pure and simple, all of the organisms having been introduced by the examining finger.

In considering further the first of our two suppositions, we have abundant evidence that in patients suffering with typhoid fever the bacillus often gains entrance to the circulation. This is not the rule, but when it does occur it is a very simple matter for the organism to be deposited on various organs and there set up lesions of a more or less severe type. So many cases of such affections are now being described under the head of post-typhoid lesions that it is difficult to take up a medical journal without seeing one. Thus, we may mention that the organism has been found as occurring in bone lesions, osteomyelitis, and periostitis by Erbermaier,¹² Valenti,⁶³ Melchior,³⁶ Dupraz,⁹ Sultan,⁵² Parsons,⁴¹ and others; in the skin and periarthritic tissues by Melchior,³⁶ Raymond,⁴³ and Rosin and Hirschel⁴⁶; in renal abscesses and mesenteric glands by Kühnau²⁹ and Flexner¹⁶; and in acute endocarditis by Carbone,³ Vincent,⁵⁴ and Girodi.²²

That organisms can pass from the maternal blood across the placental barrier into the blood of the fetus, either with or without placental lesion, is now definitely proved; and although actual experimental work with the organism under consideration, bacillus typhosus, has not been done, we have, by the

work of Max Wolff,⁵⁸ Malvoz,⁵⁹ Birch Hirschfeld,¹ Rosenblatt,⁴⁷ Simon,⁵⁰ Latis,⁵¹ and Lubarsch,³² positive evidence that the transmission of anthrax and chicken cholera is effected. This transmission of organisms from mother to fetus is by no means the rule, and although thought by some (Max Wolff⁵⁸) to be dependent on gross pathologic lesions in the placenta, there are other factors which are just as important.

On the clinical side of the question we have evidence of transmission of virus from mother to fetus in the case of anthrax, typhoid, and tuberculosis, together with infections of many forms of the pyogenic cocci. Cholera, as said above, has been observed in animals, has not as yet been observed in man (Lubarsch³²). That the transmission of the germ of typhoid from mother to fetus is not the rule is clearly shown by the fact that we have been able to collect from the literature only thirteen cases in which this phenomenon has been observed. These cases are reported by Reher,⁴⁴ Neuhauss.³⁸ Chantemesse and Widal,⁴ Eberth,¹¹ Hildebrandt,²⁵ Ernst,¹³ Giglio,²¹ Frascani,¹⁷ Janiszewski,²⁶ Marfan,³⁴ Freund and Levy,¹⁸ Dürck,¹⁰ Etienne,¹⁵ and Speier,⁶¹ and in all of them, except possibly the one reported by Giglio, the organism was proved by autopsy, cultures, etc., to have passed from the mother to the fetus. We see, then, that the argument in favor of the internal origin of the infection is a strong one, particularly when we take into account the definite Widal reaction given by the patient's blood, the suspicious character of the petechial eruption noted on the abdomen, and the general typhoidal condition of the patient.

We think, however, when we take certain facts of the case into consideration, that there is a stronger probability of it being one of mixed puerperal infection taking its origin from without. The clinical history of the patient is not typical of typhoid. As well as we were able to ascertain, she was perfectly well up to the time of her confinement, and only became seriously ill several days later. By referring to the temperature chart it will be seen that it is not characteristic of typhoid, but quite typical of pyemia, having many sharp rises to 104° and higher, followed by rapid subnormal drops. The spleen was scarcely palpable at any time during the course of the disease, and at no time was there any tenderness in the right iliac fossa. Her blood was repeatedly shown to possess a distinct agglutinative power over typhoid organisms; this, indeed, looks highly suggestive of typical typhoid fever, but

as we now know, particularly in the light of the recent excellent work of Chiari and Kraus,⁵ that this reaction is not dependent on the organism being in the intestine, we think that its action in the uterine cavity might as well have given that power to the blood. Finally, the fact of our finding several organisms in the uterus mixed with the typhoid bacillus is, we think, an argument in favor of the external origin of the infection; for had the infection been from within there would have been every reason to suppose that the bacillus typhosus would have been found in pure culture and not mixed with the most common causes of puerperal fever, the streptococcus and the staphylococcus.

While we are not in a position to state positively which of these two theories may be the correct one, we are rather inclined to the view that the case was one of invasion from without and in the nature of a mixed puerperal infection. We have felt justified in reporting it, however, as it presents several points of interest, in that it is the first instance in which the bacillus typhosus has been found in the cavity of the puerperal uterus, and in that it somewhat widens the already rapidly increasing field of operation of this most interesting organism.

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APPENDICITIS COMPLICATING THE PREGNANT AND
PUERPERAL STATES.

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ONE of the most interesting conditions complicating the gravid state is the inflammatory process in the right iliac region, a pathological factor engrafted upon a physiological condition. At best the appendical inflammation is rare during pregnancy, but I believe appendicitis occurs with greater frequency than we have heretofore been taught to believe. To my mind there is no valid reason why appendicitis should not occur more frequently during pregnancy and the puerperal period than under other conditions. When we consider the frequency of appendical inflammation in this country among males, and with somewhat less frequency in females, we have here a marked predisposition. Further, during pregnancy the enormous congestion of the entire vulvo-vagino-uterine tract, which is readily reflected upon the entire intestinal system, causing, as it does, plethora followed by torpor of the gut, with the subsequent marked constipation—we have here plainly an exciting cause which becomes almost clear evidence; with this the generally depraved and vicious state of blood will gradually fill in the circle of predispositions. During the parturient act direct traumatism applied to an unusually long appendix, prolapsed over the brim of the pelvis and open to the prolonged, well-directed, and continuous pressure by some surface of the advancing fetus, will readily give rise to an acute inflammation of that organ. It is to the diagnosis that I wish to call special attention, for here we meet the first great stumbling block. This in most cases, from personal experience, is difficult and perplexing, for we must always remember the high situation of not only tube and ovary, but the entire broad ligament and uterus. The mere fact of finding the right vaginal fornix free from fulness, exudate, or other evidence of an acute inflammation, does not by any means exclude an acute inflammation of the appendages; and, on the other hand, the presence of such evidence in that neighborhood, while strongly presumptive of

tubo-ovarian disease, cannot positively exclude that an appendicitis is absent. It is only by carefully studying both conditions that a diagnosis *may* be arrived at, and in a few cases a differentiation cannot be made. But hair-splitting differences cannot have an important bearing upon the case, since it is only a "stickler" in diagnoses who will advance arguments *pro* and *con*, and to what end? We can gain nothing, for, if the condition of the patient is such that an operation seems necessary, it will make absolutely no difference in the prognosis, present and remote, as to whether the pus to be evacuated or the organ to be amputated be either appendix or tube and ovary. Thus, I well remember two cases in which an appendicitis postpartum was diagnosed. In the first case a clear history of appendicitis which was recurrent was given the physicians in attendance. The location of the tumor, McBurney's point, and every feature was typical. The operation, performed by a distinguished surgeon two weeks after a precipitous labor, revealed a tubo-ovarian abscess of long standing. In the second case, four days after a premature delivery I saw the case in consultation. There was no evidence of uterine sepsis. the young woman had had a chill right after labor; there were present the severe abdominal pains and the rigidity of the right rectus muscle; the temperature was not high, the pulse rapid; there was constant vomit. A well-marked tumor in the right appendix region and the absence of signs of inflammation in the right vaginal vault justified a diagnosis of appendicitis. The patient was removed to a hospital and an operation performed by an incision in the right iliac region. A dense cellutic mass was discovered, involving the entire right pelvic region. No appendicitis found, and no pus present. Post-operative diagnosis, right-sided pelvic cellulitis in an unusually high situation. The cases I have to report are five in number, all of these having come under my direct observation either during or some time after the attack; one delivered by me five months after an intermediary operation. The first case is one in which a definite history of prior attacks could not be clearly elicited.

Mrs. M., IIIpara, referred to me by her family physician for delivery. After a perfectly normal pregnancy she started in labor with good, regular pains. Fetus presented by the breech. When os was fully dilated a direct extraction of the breech was readily performed and a living child was born. The whole labor lasted three hours. Placenta and membranes intact.

Six hours later a severe chill occurred, temperature mounting rapidly to 103° , pulse 124. Some nausea and vomit. Intense pain all over the abdomen, which gradually centred itself within twenty-four hours in the right iliac region. For six days the temperature and pulse were above the normal, when convalescence became established. There was no tumor to be felt, but extreme pain and tenderness over the caput coli. Nothing abnormal to be found by vaginal examination. Here a positive diagnosis of appendicitis could be made. She was returned in four weeks to her family physician. Treatment consisted in ice locally, catharsis, and rest. In a short time she developed several typical attacks of appendicitis and was referred to Dr. Meyer, of this city, for an intermediate operation. The operation proved very difficult because of the dense adhesions: a diseased appendix was removed, eight inches in length. The patient made a complete recovery.

CASE II.—Mrs. W., primipara; had had innumerable attacks of appendicitis as a girl. Shortly after her marriage she became pregnant, and while she did not have any typical attacks after her pregnancy, still the local pain and tenderness and the distress she suffered warranted her in seeking surgical advice. She was referred by her family physician to Dr. Gerster, of this city, for operation. This was undertaken at an intermediate stage when the young woman was four months pregnant. Convalescence normal; pregnancy not interrupted. For her accouchement she was referred to me. Labor set in at the expected time; the first stage was short and the position and presentation normal. When the os was fully dilated the forceps was applied and a living child born. There was no indication for the use of the forceps, but feeling that the new abdominal scar might not be able to stand the pressure of the powerful expulsive pains of the second stage, possibly leading to a weakening of that part or an extensive separation of the abdominal muscles, the second stage was made as short as possible by instrumentation under deep chloroform narcosis. I have had on a number of occasions the same complication to deal with—namely, a recent scar from a laparotomy in a parturient woman—and my invariable rule has been based on the foregoing lines: to wit, other conditions being equal, position and presentation normal, and the vertex engaged, instrumental delivery as soon as the second stage commences. The only complication to be dealt with in the second case just cited was, six hours after labor, intense, excruciating pains over the site of

the scar, with a very rapid pulse and decided stomach distress. This was interpreted as being due to rupture of an intra-abdominal adhesion. Morphine and ice bag locally soon relieved this condition.

CASE III.—Mrs. M. In this case, when the patient was two and one-half months pregnant, I removed by abdomen a suppurating ovarian dermoid. Convalescence normal, without interrupting the pregnancy. Labor at term; first and second stages completed within so short a time that I arrived just as the baby was born. For three days the condition of the woman was very satisfactory. From this time on there were noted abdominal pains, some temperature, and a rapid pulse out of all proportion to the febrile rise. The pain and tenderness in twenty-four hours centred around the caput coli. Under the usual treatment the symptoms gradually disappeared, and in three weeks the patient was on a fair road to recovery, except for some tumefaction and some tenderness in the neighborhood of the appendix; pulse and temperature normal. For some weeks prior to the operation there was noted a very slow increase in the size of the appendix induration, and there were irregular fluctuations in temperature and pulse chart. Operation was advised and refused. There then occurred suddenly a chill followed by temperature of 104° , pulse 130; increased pain and tenderness and decided fulness in the right iliac region. Immediate operation advised and consent obtained. The usual incision made, reaching far back in the loin. A small abscess cavity was found filled with broken-down tissue. Dissection had already commenced downward toward the pelvis. The appendix was found firmly embedded in the posterior wall of this mass, and the fear of opening into the peritoneum made us hesitate about its removal. Parts drained posteriorly in the loin with gauze soaked in pyrozone, and a counter-opening made in the vagina, through which a large flanged drainage tube was carried into the abscess sac. Appendix was thrown off spontaneously on the sixth day. Convalescence very slow, a low form of sepsis developing which ran its course in ten weeks. The patient is now fully convalescent.

CASE IV.—Mrs. S., primipara. Admitted to the Maternity Hospital in the seventh month of pregnancy. Previous history good except for an attack of peritonitis three years ago which lasted one week. For three days after admission the patient was perfectly well; then she began to complain of constant

nauseous feeling, some pain in the abdomen, but not severe. The pain on pressure was exactly located over the site of the appendix. Pulse and temperature normal. Treatment consisted in ice locally, catharsis, and rest in bed. This condition continued for six days, when gradually a temperature was noted, with corresponding increase in pulse rate. Vomiting occurred and was repeated at short intervals. Local pain and tenderness markedly increased, but no tumor could be made out either by rectum, vagina, or by abdominal palpation. Just before operation pulse was 124, temperature 101.5°. It was now decided to interfere. Under chloroform narcosis the usual oblique incision was made, and it was found that a tumor *was* present, firmly adherent to, and its inner boundary formed by, the right uterine wall. Anteriorly and in contact with the parietal peritoneum were the right tube and ovary, constituting part of the anterior wall of the abscess sac. Posteriorly we found the peritoneal cavity shut off by adhesions with gut and the necrotic appendix firmly bound down. The tube and ovary were at once tied off and about four ounces of fetid pus escaped. The cavity thoroughly irrigated and drained by numerous strips of narrow gauze. Temperature and pulse dropped to the normal in twelve hours and remained so for a very short time. Exactly twenty-four hours after the operation the patient started in with labor pains, and, the os being found somewhat dilated, the patient was delivered at once by manual and instrumental interference. The reason for this will be discussed later. The temperature and pulse now began to rise rapidly, and, fearing an acute general sepsis, ten cubic centimetres of an antistreptococcus serum were used with the happiest results, for in less than twelve hours both temperature and pulse became absolutely normal. The serum was again used in thirty-four hours, more as a means of safety than for any direct indication. For the next five days the patient's condition normal, bowels and flatus freely passed, appetite good, tongue clean, and a rapid convalescence was expected. But in spite of this the patient suffered considerable pain, which was thought due to stretching and the tearing of the adhesions from the rapid and normal involution of the uterus. Appendix sloughed away on the fifth day. On the twelfth day the patient began to have irregular chills, slight headache, loss of appetite, severe pain in the abdomen, and the wound did not drain well through the large drainage tubes. Pocketing of pus was suspected and the patient narcotized and carefully

examined. In spite of careful examination with finger and probe, the general peritoneal cavity was opened; and it was fortunate that this mishap occurred, for, in spite of a flat belly and absence of all pain on pressure, a considerable amount of sero-pus escaped from the peritoneal cavity from the opening accidentally made. This tract started at the original wound, passed upward and to the left of the anterior uterine surface into the free peritoneum. The original wound was freely laid open into the free peritoneum. The left abdominal wall was freely incised, and the whole peritoneum thoroughly and carefully washed with quarts and quarts of hot saline solution. The intestines were red and injected, and completely covered by a fresh lymph exudate. The peritoneal cavity was drained in all directions by many yards of narrow strips of sterilized gauze. There was very little reaction from this extensive operation. In thirty-six hours large rubber drain tubes were inserted instead of the gauze. It was about this time that a large fecal fistula occurred; so large was it that hardly any stool passed per rectum. The serum was continued in small doses for a number of days, and convalescence became practically established after the incision into and complete drainage of the peritoneum. The fistula, under antiseptic irrigations, healed slowly, and in three months was completely closed and the patient in excellent condition. This case would appear of more than passing interest, and the one factor to be dwelt upon especially is the modus in technique of delivery in these cases in which the uterus forms an integral part of the wall of the abscess cavity. In the largest number of pregnant women operated upon for appendicitis there should be no reason (1) for the occurrence of a premature birth, and (2) no reason, should labor occur prematurely, for operative interference, as about to be described, since in a certain number of cases the appendix lies either almost free in peritoneal cavity, or else, if tumefaction be present, the walls of the abscess do not impinge upon or are formed by any part of the uterus. But the difficulty arises where a pregnant uterus is closely united and intimately attached to the appendix mass. It is readily to be seen that if in such a case the uterus begins to expel its contents, the freshly formed adhesions between it and the appendical abscess are readily severed, the free peritoneum opened, and a general and usually fatal septic peritonitis occurs. To prevent this it has been my method of procedure that if in a given case the conditions stand as discussed above, at the first signs of a

beginning labor the woman is to be delivered by such a method as will disturb the relations between uterus and abscess sac as little as possible. This I would accomplish, under chloroform narcosis, by the dilatation of the os uteri by manual or other mechanical means, version or forceps as elected, and immediate tamponade of utero-vaginal tract. Personally there is a feeling that there would be less local and general disturbance by this, a short, safe, and elective method, than by one which allows Nature to take her own course, which might cover a period lasting over many hours, with the possibility ever present of disturbing the intimate union and relation between the uterus and abscess sac.

CASE V.—Mrs. De B., seen with Dr. H. Bloch in consultation, had always been in perfect health up to the present time. Is about four and a half months advanced in pregnancy. Her present attack commenced with severe vomiting and abdominal pains, for which she was treated by another gentleman, whose diagnosis had been a spoiled stomach. Getting no better, her present medical attendant saw the case and diagnosed the condition as one of acute appendicitis. There was very little temperature, but a rapid pulse and persistent vomiting. The general abdominal pains gradually ceased and became located in the right iliac region. The condition becoming worse, I saw her on the fourth day. The woman looked very sick. Temperature per rectum, 100° , pulse 130. There is constant nausea and vomiting; pain on urination; abdomen moderately distended and painful, and the fundus uteri could be made out midway between umbilicus and symphysis. There was some tumefaction over the caput coli; here on pressure the pain was severe, but most severe was the pain on pressure in the right loin. Rectal and vaginal examination negative. Operation advised and accepted. An incision high up, and more posteriorly carried far back into the loin, was made and about one-half pint of pus escaped. Abscess encapsulated, and it was thought not advisable to look for the appendix. There was found a pus tract leading down toward the vagina. The parts thoroughly washed with pyrozone and drains passed into the loin, direct into the appendix cavity, and one strip into the pelvis. There was almost immediate amelioration of all the symptoms. Pulse and temperature dropped to nearly the normal; vomiting ceased; abdomen flat; bowels and gas passed naturally and freely. Large rubber drains inserted on the fourth day. On the sixth day the patient's condition so satis-

factory and the wound so healthy in appearance, with no discharge, that it was decided under local anesthesia to close the wound with secondary suture. Like a thunderbolt from the clear blue the condition of the patient changed for the worse. Very acutely there occurred symptoms of an acute intestinal obstruction: persistent vomit; very tympanitic abdomen; bowels could not be made to move, nor did gas pass; increasing rapidity of the pulse, etc., etc. The possibility of an acute general septic peritonitis was considered. Exploration under narcosis advised. The original incision was enlarged upward and downward. Some pus escaped from the lumbar region. The obstruction was found in the original wound by a new band constricting the ascending colon. Further exploration revealed pus coming from the left of the colon, evidently from the free peritoneal cavity. Multiple incisions were now made, one in the mid-line, one in the left flank and into the left abdomen, and one through the vagina. Large amounts of pus washed out by copious flushing with a saline solution; gauze packing for drainage in all directions; antistreptococcus serum, 10 cubic centimetres every six hours, given. The patient aborted in twenty-eight hours and succumbed from the increasing sepsis in forty-eight hours. The two cases last reported were treated by large and repeated doses of a reliable streptococcus serum. It is an open question whether the complete recovery in Case 4 was due to the serum alone or to the radical surgical manoeuvres instituted, or to both combined. Certainly it was noted that after each antitoxin injection there was more marked improvement, and this was especially noticeable in the increased diuresis, the fall of the pulse, and the lowering of the temperature. My experience in the surgical use of the serum is rather limited, and yet from such a small number of cases (purely surgical) there is a decided suspicion that in the streptococcus antitoxin we have a very valuable adjuvant to our therapeutics which ought never to be omitted. In obstetric streptococcus cases my experience has been large, and I have yet to save my first case by its use. These cases do not include cases of pure sapremia, where there is merely a toxic absorption, in which the curette, douching, and thorough drainage are all that is necessary for a prompt and complete recovery; but in my list are the pure or mixed streptococcus cases, characterized practically by absence of all local symptoms and by the presence of low temperature, high pulse, and

the presence of the micrococcus pyogenes in the blood. In these cases, as was above stated, the serum has always failed; and why? I do not know. There must be some modifying influence which the puerperal period exercises over the toxins thrown into the circulation. As to the dosage of the serum, while I have always used large and repeated doses, as well as the smaller amounts, I cannot see that the therapeutic effects are any different. From a personal experience there have been noted unpleasant symptoms from single large doses which were not observed when smaller amounts were used, and in some cases the symptoms presented were such as to warrant me in surmising an acute poisoning from the serum: intense headache, nausea and decided and repeated vomiting, with very rapid pulse, high temperature running up 3° to 5° within a short time after exhibiting the drug, this condition being followed by profuse sweating and prostration, leaving the patient, if anything, worse than before. The good effects noted by the drug, and where it seems to be doing favorable work, is either a fall of temperature at once or a temporary slight rise, decided falling of the pulse, profuse diuresis, and a not exhausting diaphoresis. Under these conditions it can be safely administered. On the other hand, where persistent high temperature, rapid pulse, profuse vomit occur the drug is doing harm. Note, for instance, the following case, where a rather mild septico-pyemia followed a total hysterectomy; micrococcus pyogenes demonstrated in the blood; temperature never over 101° ; pulse about the highest, 120; serum used, 10 cubic centimetres every twelve hours. At once, temperature 103° to 104° , pulse in proportion, incessant vomiting, great prostration, etc. The serum continued in smaller doses every six hours, but the high temperature and rapid pulse, without variation, are present. Suspecting the serum to be at the bottom of the trouble, the hypodermatics of the same are omitted, and in twelve hours the condition changes at once and convalescence is fully established. So marked was the change in the condition of the patient that it was evident to everybody connected with the case that the serum was causing the disturbance.

ACUTE INVERSION OF THE UTERUS FOLLOWING
PARTURITION, WITH REPORT OF A CASE.

BY

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ACUTE inversion of the uterus occurring with or following parturition is so serious and rare a complication that it was thought a brief review of the subject, with the report of such an accident, might be a matter of considerable interest and importance. Inversion of the uterus was recognized and certain causes assigned for it by the earliest medical writers; but the first extensive description was given by Crosse,¹ of England, in an essay published in 1846. Although inversion occurs with other conditions, Crosse found that, out of 400 cases he had collected in the literature, 350 of them followed pregnancies. The present writer has limited his study to the parturient inversions.

Frequency.—The great rarity of the accident is well known to every one. The statistics of all the large hospitals are practically the same. One case occurred among 190,000 deliveries at the Dublin Lying-in Rotunda; in St. Petersburg no case appeared among 200,000 births; and in the large German clinics the same infrequency has been noted. The vast majority of obstetricians everywhere have never seen a case. During the last five years the writer has found about 40 cases reported in the medical literature of different countries; about 20 of them were reported in America. Accurate conclusions as to its frequency cannot, of course, be drawn from these figures, for many cases are not reported. A number of observers have suggested that it is less frequent in large institutions, where more precise methods of observation and treatment would tend to prevent such complications.

Etiology.—The causation of this serious accident has naturally attracted the attention of different writers and provoked considerable discussion. Formerly an ignorant midwife, a precipitate or very slow labor, and traction on the cord appear to have been considered the *sine qua non*. Traction on the

cord, especially, was given as a cause in the large proportion of the cases. If this were so, Emmet says, inversion ought to have been much more frequent in earlier times, when more cases were entrusted to midwives and when the knowledge of obstetrics was considerably less than it is now. We know, however, from obstetrical statistics that the relative frequency of inversion has not changed.

Crosse divided the causes into predisposing and direct. He mentioned the following as predisposing: all general diseases that relax and enfeeble the system; erect position during labor; partial inertia of the uterus; fundal attachment of the placenta. He classified the direct causes as follows: (1) such as are situated in the uterine tissue itself; (2) such as act on the outer surface of the uterus, pressing it down; (3) such as act on its internal surface, pulling it down. He further adds that no cause of the first class (such as are situated in the uterine tissue itself) can start the inversion.

Tyler Smith,² writing in 1849, compared inversion of the uterus to intestinal intussusception. All cases, according to Smith, are due to a perverted activity of the uterus. The first stage of the process, which he termed introcession, he thought was caused by an active contraction of the fundus incited by the weight of the adherent placenta. Hour-glass contraction of the body of the uterus immediately followed, by which the introceded fundus was pushed further down, and the second stage, which he termed intussusception, took place. The os, which up to this time had been dilated, now became contracted from the irritation of the passing fundus, and the third stage, complete inversion, was accomplished. In other words, the uterus, according to his theory, can invert itself by an active contraction of one part.

Matthews Duncan³ in 1868 showed that this theory is not tenable. Duncan described at some length not only the mechanism by which inversion is produced, but also the phenomena attending the so-called hour-glass contraction and the normal contraction of the uterus after delivery. He pointed out that the condition of the uterus described by Smith is normal, and that, if Smith's theory were true, the uterus ought always in a normal case to turn inside out. He classified the causes of inversion as spontaneous and artificial, in both of which the uterus is either in an abnormally passive condition or is incited to some irregular activity. He showed that the initial factor of hour-glass contraction, for instance, in the production of inver-

sion, is in the abnormally relaxed state of the uterus above the contraction.

Meigs⁴ cites a case of placenta previa to illustrate the effect of a flaccid uterus in starting an inversion. A version had just been done and the fundus was markedly relaxed. While the placenta was being removed he noticed the fundus follow his hand, but pushed it back before inversion became complete.

Crampton⁵ in 1885 reviewed and tabulated 226 cases. His conclusions in regard to its occurrence and etiology are as follows:

“1. Inversion is preceded by paresis of some portion of the uterine muscle (not necessarily of the placental site), caused either by too frequent child-bearing, tedious labor, previous miscarriages, traumatism, emotional excitement, or too rapid labor. It is a pure neurosis in its inception. Traction on the cord may induce prolapsus; if severe, procidentia. It will never alone produce inversion, but may facilitate it if paresis is present. 2. It is more apt to occur in primiparæ. 3. This liability in primiparæ is due to the peculiar emotional excitement preceding and associated with a first labor, reflected upon the exhausted uterine muscles, for the first time called into unusual action. Given a slight degree of depression of any portion of the uterine body, and the natural rigorous contractions of the uterus in a first labor become a source of increased danger.” In ten of Crampton’s cases there was a very short cord.

Beckman,⁶ who has written the most recent extensive paper upon this subject (1895), gives all of the commonly accepted artificial causes, and, from 100 tabulated cases taken from the literature between the years 1885 and 1895, draws the conclusion that the spontaneous origin is more frequent than any of the previous writers have supposed. He considers that 54 of his cases were thus caused, 21 were due to violent procedure, and in 25 the description was too meagre to ascribe a cause. Relaxation of the entire or some part of the uterus is necessary, he says, for a spontaneous inversion to occur.

The presence of a firmly adherent placenta is frequently noted and judged to be a cause of inversion. Miller,⁷ for instance, reported a case of a woman whom he had delivered of three children. An inversion occurred with the first that was easily replaced. The placenta was adherent in both of the other deliveries, and he used every precaution to prevent a recurrence of inversion. With the third he experimentally

tried a little traction on the cord and found that the fundus began to invert.

The term "adherent placenta" is used, we know, indifferently by many physicians to express both retention of the placenta from irregular contractions of the uterus and actual and persistent adherence of the placenta to its original site. It seems very probable that the frequent presence of adherent placenta in these cases is not the cause of the inversion, but that lack of contraction at the placental site causes both the adherent placenta and the inversion.

Hennig, quoted by Beckman and also by Harrison,⁸ noted the frequent insertion of the placenta at the fundus in these cases. It seems to the writer that in many cases it must be extremely difficult, because of the disturbed relations, to exactly judge where the placenta is attached. Hennig also thought that in a partially detached placenta the accumulating weight of blood might favor an inversion.

Abdominal pressure and a poorly applied Credé must not be omitted in mentioning causes outside of the uterus. A number of cases are on record in which inversion has occurred immediately after coughing and violent straining at stool. It is also interesting to note that inversion has taken place after death.

Before leaving the discussion of the etiology, the writer offers the history of his own case as an illustration of some of the conditions frequently found with this complication. The patient was 22 years of age, a Ipara, and had been married three years. She had always been delicate, of an extremely nervous temperament, and had suffered from severe dysmenorrhea. During her first year of married life she was treated for vaginismus. Her nervousness had increased during her pregnancy, and she was very apprehensive of her approaching labor.

I was first called to see her in the early evening on account of the rupture of the membranes. She was very nervous, but had had no pains. Upon examination the membranes were found to be ruptured and the os fully three-fourths dilated; the vertex presented in the L. O. A. position. She assured me upon further questioning that she had not had pains of any sort. I left the house with instructions to call me as soon as she felt any pain.

I was summoned again about 5 o'clock the next morning, and found her with fairly good uterine contractions and in the second stage. The head advanced slowly for one hour and a

half until it reached the pelvic floor. At this time the pains began to diminish in force and frequency, and the patient soon became exhausted. Forceps was then applied under chloroform anesthesia and a good-sized child was quite easily delivered. The cord, that was around the child's neck once, was slipped over the head with considerable difficulty. The perineum was torn to the second degree. A gush of blood followed the delivery of the child, but the amount was not alarming and it immediately stopped. While waiting to express the placenta preparations were made to suture the torn perineum. Only a few minutes had elapsed when it was noticed that the patient was pale and that the pulse had become more frequent. The hemorrhage, that had stopped after the first gush, had begun again, but was not very severe. An immediate attempt was made to express the placenta, but the uterus could not be detected through the abdominal wall. The placenta was found in the vagina, firmly adherent to the inverted uterus, from which it was removed with considerable difficulty. The cord was of the average length. The hemorrhage ceased and did not recur.

The patient was now out from under the influence of the chloroform and complained bitterly of pain in the lower part of her abdomen. Her condition within ten minutes had become critical. The pulse was very rapid and feeble, and she was in a condition of profound shock. Unsuccessful efforts were made to reduce the inverted uterus without chloroform. A consultant was sent for, and in the meantime all available means were used for treating the general condition of the patient. When the consultant arrived, one hour afterward, the inverted uterus projected beyond the vulva. Her general condition, too, had grown progressively worse, so that she was now almost moribund. Another effort at reduction was also futile, and in about half an hour the patient died.

The writer suggests the following points as of especial importance in the etiology of this case: (1) the nervous condition of the woman, as shown, for instance, by the previous history of vaginismus; (2) the complete absence of pain during the greater part of the stage of dilatation; (3) the uterine inertia manifested in the latter part of the second stage; (4) the difficulty in the removal of the cord from the neck of the child; (5) the adherent placenta.

In addition to the writer's own case, 24 other cases have been

taken from the literature of the last five years, and a brief summary of them has been attempted in the table on pages 214, 215.

While this number of cases is too small to draw accurate conclusions from, yet taken in connection with the studies of previously reported cases they furnish some data on the occurrence and etiology of this complication.

1. Age: Most of the cases of this series occurred in young women, the youngest being 17, the oldest 44.

2. Number of children: Sixteen of them were primiparæ.

3. Previous history: In this there was nothing of special importance. One case had uterine disease before pregnancy and albuminuria during pregnancy; one case had prolapsus uteri; one case had phthisis; two cases had contracted pelves.

4. Labors: It seems especially worthy of notice that 22 of the labors were abnormal, 9 were very long labors, 4 were very rapid labors, 4 were forceps deliveries, 2 had versions performed, 1 was premature (six and a half months).

5. Cord: Two had very short cords. In 8 cases traction was used.

6. Placenta: In 10 cases the placenta was said to be adherent. One was a case of placenta previa. There were 2 cases of placenta succenturiata, one of which⁹ occurred seventeen days after labor while the patient was at stool. This case was judged to be due to a placental polyp that had had its origin in a supplemental placenta.

Symptoms.—The ordinary symptoms of acute inversion are sudden and severe pain, more or less hemorrhage and shock. Reese¹⁰ reports a case with no constitutional symptoms. There are a number of cases on record in which the symptoms have been so slight that the lesion has not been recognized for several months. Such a thing could hardly happen at the present time with any careful obstetrician. The disparity between the amount of hemorrhage and shock is a striking clinical fact. In the cases of the table there were 8 in which the shock was extreme but the hemorrhage was either slight or moderate. In the writer's own case the hemorrhage was not enough to account for the patient's death. The physical signs are so evident that it seems hardly possible to mistake the condition. Its extreme rarity is the only excuse for momentary doubt. The time of occurrence is most often immediately after the birth of the child and before the birth of the placenta. In 13 cases of the table it occurred at this period. Sometimes it is

No.	Age.	Para.	Previous history.	Labor.	Time of inversion.	Placenta.	Cord.	Probable cause.	Symptoms.	Result.	Reference.	Re- porter.	Remarks.
1	?	I.	...	Long; forceps.	Before birth of placenta.	Adherent.	.....	Uterine	Severe hemorrhage; severe shock.	Reduced; recovery.	Brit. Med. Jour., 1892, i., 1253.	Gray ...	Reduced with placenta <i>in situ</i> .
2	33	I.	...	Long ..	"	"	Short.....	Uterine; short cord.	Moderate hemorrhage; severe shock.	Not reduced; recovery.	Brit. Med. Jour., 1893, i., 1109.	Waterfield,	Spontaneous reduction three months after.
3	25	I.	....	Normal..	Twenty-four hours after labor, at stool.	Succession-riata.	.....	Uterine	"	Reduced; recovery.	Brit. Med. Jour., 1894, i., 633.	Schofield,	
4	23	I.	Uterine disease before pregnancy; albuminuria during pregnancy.	"	Before birth of placenta.	Adherent .....	.....	"	Severe hemorrhage; severe shock.	Not reduced; death.	New York Jour. of Obstet. and Gyn., 1893, iii., 1060-2.	McGill-Endy,	Reduction not tried until fourteen hours after labor.
5	27	?	Phtisis.....	Rapid ...	"	"	.....	"	"	Reduced; recovery.	"	"	
6	?	II.	Prolapsus uteri.	"	"	"	Traction.	Postpartum labor; traction cord.	Slight hemorrhage; moderate shock; intense pain.	"	New York Jour. of Obstet. and Gyn., 1894, ii., 124.	Pickel..	Expulsive pains when traction was made.
7	17	I.	.....	Long ....	"	.....	.....	Uterine.....	Moderate pain; moderate shock.	"	Southern Pract., 16, 1894.	Perry....	Severe expulsive pains when head on perineum.
8	24	II.	Very nervous temperament.	Normal..	?	.....	.....	?	Condition not known for four months.	Abdominal hysterectomy four months after; recovery.	New York Med. Rec., 1893, 176.	McIntosh.	Severe expulsive pains at end of second stage.
9	23	I.	.....	"	After birth of placenta.	.....	Traction	Traction cord.	Slight hemorrhage.	Reduced five weeks after; recovery.	Centralb. f. Gyn., 1893, xvii., 473-6.	Meyers..	
10	19	I.	.....	Long ....	"	.....	"	Uterine; traction cord.	"	Reduced six months after.	Centralb. f. Gyn., 1893, xvii., 945-8.	Küstner.	Reduced by incision through posterior for- mix.
11	26	V.	.....	Rapid ...	"	.....	"	Postpartum labor; traction cord.	Severe hemorrhage; severe shock.	Reduced; recovery.	Maritime News, 1896, viii., 9.	McKeon..	
12	34	I.	.....	Long ..	"	.....	"	Uterine traction cord.	No hemorrhage; no shock.	"	Birmingham Med. Review, 1894, xxxv., 142-8.	Montgomery.	

13 ? I.	Long ..	"	"	"	"	Traction cord.	Severe hemorrhage; severe shock.	"	Deutsch. Woch., 1896, xxii., 108. Internat. Clinics, 1892, 2 s., ii., 294.	Uterus poorly contracted after extracting placenta.
14 ? II.	Forceps first labor; contracted pelvis; over-time.	Induced; normal.	"	"	Adherent; manual extraction.	Moderate traction.	Uterine; traction cord.	Shock.	Hirst.	
15 20 I.	Long	Long . . . . .	"	"	.....	Traction.	"	Collapse	Lancet, 1893, ii., 691.	Present writer.
16 20 I.	Long; forceps.	Before birth of placenta.	"	"	.....	.....	Uterine	Moderate hemorrhage; severe shock.	Trans. Am. Gyn. Assoc., Philadelphia, 1893, xviii., 200-14.	Davis ..
17 24 I.	Normal; post-partum hemorrhage.	Five days after birth, at stool.	"	"	.....	.....	"	Shock.	AMER. JOUR. OF OBSTET., 1897, 548.	Burton ..
18 41 IX.	Prenatal; version.	After birth of placenta; partial.	"	"	.....	.....	"	"	AMER. JOUR. OF OBSTET., 1896, 42.	Long ..
19 29 I.	Long	Before birth of placenta.	"	"	Adherent. . . . .	.....	"	Severe hemorrhage; severe shock.	AMER. JOUR. OF OBSTET., 1895, 406.	Jewett. . .
20 ? III.	L. O. P.; forceps.	Recognized as partial before birth of child.	"	"	Manual extraction to prevent complete inversion.	Six inches.	Short cord.	"	AMER. GYN. AND OBSTET. JOUR., 1897, 415.	Shock out of proportion to hemorrhage.
21 ? I.	Premature (six and a half months)	After birth of placenta.	"	"	.....	Violent traction.	Violent traction on cord.	"	"	Severe expulsive pains at end of second stage.
22 ? II.	Rapid	Seventeen days after labor, at stool.	"	"	Succession-riata (?) polypt.	.....	Uterine	Moderate hemorrhage; severe pain.	"	"
23 ? I.	Inertia; forceps.	After birth of placenta.	"	"	.....	Eighteen inches.	"	Moderate hemorrhage; collapse.	"	"
24 33 III.	Narrow pelvis.	Before birth of placenta.	"	"	Adherent. . . . .	.....	"	Moderate hemorrhage; slight shock.	Amer. Gyn. and Obstet. Jour., 1897, 541.	Atony of uterus before expression of placenta.
25 22 I.	Vaginismus; nervousness.	"	"	"	"	Around neck.	"	Moderate hemorrhage; severe shock.	.....	Absence of pain during large part of dilating stage.

1 Under the heading Probable Cause, "uterine" means that there is some point in the history that suggests, apart from other causes, a uterine origin.

delayed for several days, but probably many of them were early cases that were not recognized.

Prognosis.—The condition is almost always serious, threatening the life of the patient within a few hours. Some cases of marvellous escape have been reported. Freund¹¹ tells of a case in which a midwife introduced her hand into the uterus to extract the placenta and inverted the uterus; then she quickly cut the inverted organ away and the patient made an uninterrupted recovery. The mortality is given as anywhere from 30 to 50 per cent. There were six deaths among the cases in the writer's table. Many cases recover from the serious general symptoms and the uterus remains chronically inverted. Spontaneous reduction sometimes occurs after a long time. In Case 2¹² of the table spontaneous reduction took place three months after labor. There is little tendency for a uterus to invert the second time. A few such have been reported.

Treatment.—We have, besides the local condition, the three things, shock, hemorrhage, and sepsis, to confront in the same way that we do in any severe injury. There are no fixed rules to guide us. Some authorities say reduction must be immediately accomplished at any cost. Lusk¹³ advised delay until there is recovery from the shock. Some cases have died after reduction; others, apparently just as serious, have recovered with the uterus left inverted. Case 16 of the table, reported by Davis,¹⁴ died two hours after reduction. In Case 2 of the table, reported by Waterfield,¹² in which the shock was severe, the uterus could not be reduced, but the patient recovered and the uterus reduced itself three months afterward. There does not seem to be any special method of reduction that is generally applicable. The chief obstacle is the constricting ring. Tyler Smith's² suggestion, of persistent pressure on the fundus and constriction by means of the hand, seems the best way. Smith suggested that the ring is not equally tight all of the time, and, by continuous pressure applied for some time, any degree of relaxation could be noted and taken advantage of. Possibly the short duration of efforts at reduction has been the cause of some failures. Cutting operations, although successful in the chronic stage, can hardly aid much during the period of shock. Case 10 of the table, reported by Küstner,¹⁵ was reduced six months afterward by cutting through the posterior fornix. Case 24 of the table, reported by McIntosh,¹⁶ was cured by abdominal hysterectomy four months after the accident happened.

The question whether the placenta should be removed before or after reduction has been discussed by several observers. In most of the cases it has been removed before, and it would seem to be the more suitable procedure. The reduction in the bulk of the mass is a distinct advantage, and the hemorrhage in most of the cases after removal has been slight. One of the most important parts of the immediate treatment would seem to be the use of the best modern methods for the treatment of shock. The very fact that this accident may occur should be enough to suggest that any one attending a case of labor must be prepared to meet the severest forms of surgical shock.

260 WEST FIFTY-SEVENTH STREET.

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UREMIA IN THE PROCESS OF CHILD-BEARING.¹

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THE term uremia I take to mean the condition of the system resulting from the retention in the blood of toxic products which should normally be eliminated chiefly in the urine. Eclampsia is a frequent sequel of uremic phenomena occurring in the course of the child-bearing process. In our subject are

¹ Read at the meeting of the Illinois State Medical Society, May 18, 1898.

included the eclampsias, neuroses, psychoses, and other symptoms due to the toxemia accompanying or following pregnancy. The convulsions themselves are the more or less accidental accompaniments of the vicious blood state. The urinary disturbance may be due to two different general causes—a pre-existing renal lesion, or an acute abnormal state of the excretory apparatus arising *de novo* during pregnancy. The latter is probably the more common. Our subject includes the albuminuria of pregnancy, which is found in a considerable proportion of all cases; the cases exhibiting the more serious symptoms of uremia without eclampsia; the cases where the toxemia causes convulsions, as well as the cases, few in number, where eclampsia comes on without albuminuria or other sign of urinary disturbance. The reality of the last class of cases is to me somewhat doubtful. Ingerslev collected, however, 108 cases where there was eclampsia but no albuminuria nor pathological changes in the kidneys.² I believe that symptoms of kidney lesions are often reported absent on insufficient data. Albumin may exist in one specimen of a day's urine and be absent in another taken a few hours later; albumin may be absent in the morning and present in the afternoon, or *vice versa*. The absence of albumin can only be proved when a report is made on an average specimen from the whole amount passed in twenty-four hours, or when the urine is examined on different days. Again, the absence of albumin is not a certain proof of the absence of kidney disease. It rarely happens, however, that the urine is perfectly normal in all respects, chemically, physically, and microscopically, when there exists any lesion of the kidney, demonstrable at the autopsy. Many authentic cases are recorded where the urine was found free from albumin and casts a few hours before an attack of eclampsia, but almost invariably both were found afterward. This fact has led some authors to assert that the albuminuria and casts were the result instead of the cause of the eclampsia. That this last is not the case seems probable, since kidney disturbance seldom or never follows the convulsions of epilepsy, hysteria, or strychnine poisoning, however violent the seizures may be.

The first tendencies toward showing a causal relation between kidney disease and eclampsia were begun even before Bright had written his articles on nephritis. The first records were in 1797 by Demanet,³ who observed a connection between dropsy

and eclampsia. Then Hamilton⁴ observed that women who had great edema in the last months of pregnancy were liable to eclampsia. In 1843 Lever⁵ and Simpson⁶ noted the etiological relation of albuminuria to eclampsia. Frerichs,⁵⁴ in 1851, first collected data on the connection between puerperal eclampsia and nephritis. He concluded that the convulsions were the result of uremic intoxication and that carbonate of ammonium was the toxic material.

Albuminuria occurs in about five per cent of pregnant women.² In the large majority of cases there is no important kidney lesion and the albumin is due to a disturbed blood pressure or to hyperalbuminosis of the blood. Of the last 1,000 cases entering the Boston Lying-in Hospital before 1890, albumin was absent in 607 and present in 393 (40 per cent). There were convulsions in 27 of the albuminuric cases (7 per cent). A. Worcester⁸ in 700 cases of midwifery had 11 cases of eclampsia. T. E. Cunningham⁹ in 2,000 obstetrical cases found eclampsia only 3 times. In the discussion of the above paper Dr. Driver said that 6 cases had occurred to him in his first 1,000 cases of labor. Varnier¹¹ states that of 800 pregnancies in women of good health in which the urine was examined every fifteen days during the last three months, only 3 had albuminuria, and these were primiparæ. Löhlein¹² analyzes 52,328 labors occurring in German clinics during two years and finds 325 cases of eclampsia—1 in 161. Palmer¹³ concludes, from study of statistics of the Cincinnati Hospital, that albuminuria exists in 50 per cent of all pregnancies at some period. No other observer has found such a large number, even when the period of parturition is included, where, as is well known, the great muscular exertion causes a slight temporary appearance of albumin; but even here the average is 24 per cent.² In the Dresden Frauenklinik, from September 1, 1883, when Leopold took charge, to June, 1891 (seven and three-quarter years), there occurred 10,718 births. Among these there were 81 cases of eclampsia (.75 per cent)—1 in 133; 70 (86.42 per cent) were primiparæ and 11 (13.58 per cent) were multiparæ. Of the whole number of births 5,363 were primiparæ and 5,342 were multiparæ, and 13 are not stated. Therefore eclampsia took place in 1.32 per cent of the primiparæ and in .21 per cent of the multiparæ.¹⁴ Schröder and Scanzoni estimate that eclampsia is found about once in each 500 cases of labor.

FREQUENCY OF ALBUMINURIA IN PREGNANCY.

Authority.	No. of cases.	No. of albuminurias.	Per cent.
Richardson ⁷	1,000	393	40.
Richardson ⁷	156	66	41.
H. Fehling, ¹⁵ Basel.....	1,241	73	5.9
H. Fehling, ¹⁵ Stuttgart.....	767	18	2.3
Mayer ¹⁶	106	5	4.7
Blot ¹⁶	205	40	19.5
Litzmann ¹⁶	79	16	20.
Winckel ¹⁶	104	10	9.6
Ingerslev ¹⁶	600	29	4.8
L. Mayer ¹⁷	1,124	60	5.4
Lantos ¹⁴	70	13	18.5
Varnier ¹¹	800	3	.4
Total.....	6,252	726	11.5

Fehling says that albuminuria occurs in 6 per cent of all pregnant women, evenly divided between primiparæ and multiparæ, and in labor 30 per cent show albuminuria. ²¹

FREQUENCY OF ALBUMINURIA IN PARTURITION.

Authority.	No. of cases.	No. of albuminurias.	Per cent.
Mayer ¹⁸	100	40	40.
Litzmann ¹⁸	100	37	37.
Flaischlen ¹⁸	537	93	17.3
Moericke ¹⁸	100	37	37.
Winckel ¹⁸	370	72	19.4
Ingerslev ¹⁸	153	49	32.
L. Mayer ¹⁷	1,138	284	25.
Lantos ¹⁴	600	356	59.33
Total.....	3,098	968	31.

FREQUENCY OF ECLAMPSIA.

Authority.	No. of cases.	No. of eclampsias.	Per cent.
Winckel ¹⁴	6,323	23	.36
Lantos ¹⁴	14,815	53	.36
Löhlein ¹²	52,328	325	.62
Leopold ¹⁴	10,718	80	.75
Marie Zakzyska ¹⁰ (private practice)..	187	3	1.8
T. E. Cunningham ⁹ (private practice)	2,000	3	.15
A. Worcester ³ (private practice).....	700	11	1.5
Driver ⁹ (private practice).....	1,000	6	.6
Richardson ⁷	1,156	33	2.8
W. A. Dunne ¹⁹ (private practice)....	1,168	3	.25
Paupertoff ²⁰ (Moscow Obstet. Ins.)..	46,539	288	.61
Total.....	136,934	878	.6
Private practice.....	5,055	76	.5
Hospitals.....	131,879	802	.61

Contrary to preconceived opinion, it will be seen from my figures that there is little difference in the percentage of eclamptics in hospitals and private practice. Yet there is every reason why hospitals should have a larger proportion of such cases.

Primiparæ are three times as liable to eclampsia as multiparæ. In hospitals everywhere there is always a great preponderance of primiparæ; therefore from that factor alone their statistics should show a larger number than should private practice. As in the case of most diseases, so in parturition, the severer cases will go to the hospitals, and for this reason we would naturally expect to find more cases of eclampsia there. It is said to occur more often among those suffering from nervous excitement, shame or remorse, in twin births, in hydramnios, and in deformed pelvis—all cases that are more liable to go to a hospital.

The general frequency may be got at by reference to mortuary statistics. Knowing the birth rate for a given time and the death rate from puerperal eclampsia, we can estimate the frequency of the latter with a degree of accuracy dependent upon the accuracy of the death certificates. In this country we all know there is much to be desired in the carefulness with which physicians prepare death certificates. According to Hegar, of 34,553 labors in Baden (1864-6), 0.05 per cent died of eclampsia; and according to Ehler, of 141,702 labors in Berlin (1885-7), 70, or 0.49 per cent, died of eclampsia. Thus, if the mortality of eclampsia be 1 in 5 we have a frequency of eclampsia of 1 : 400, and if the mortality be 1 in 3 we have a frequency of 1 : 675.

Why, in the normal process of child-bearing, should we find so often the manifestations of a disturbance of the excretory functions, and what are the causes of the phenomena which we call uremia? Most authorities are agreed that it is a uremia, using the term in the sense of an autoinfection from retention in the blood of matter which would normally be excreted, or an overproduction of toxins beyond the powers of elimination. What this poison is and what causes it to appear in the blood of the pregnant woman have been points of controversy since uremia was recognized as a pathological entity. As to the first, it has been answered that the poison is urea, that it is carbonate of ammonium,¹ that it is kreatin and kreatinin, that it is a ferment not normally present, that it is a product of the metabolism of the fetus, and, finally, that it is

an infective ptomaine. As to the second, it has been answered that the abdominal pressure causes a passive congestion of the kidneys, that the pressure on the renal arteries causes an anemia of the kidneys, that the pressure on the ureters by the presenting part causes a urinary stasis, that the irritation of the uterus on the pelvic nerves causes a reflex spasm of the renal vessels and a consequent anemic condition, that the hydremia of pregnancy causes a diminished nutrition of the kidneys and therefore a failure of their excretory powers, that the same cause acts on the liver so as to interfere with the abstraction of urea and other waste products from the blood.

Puerperal toxemia occurs more often in very young or in very elderly primiparæ. Goldberg states that eclampsia happens in 1.32 per cent of primiparæ and in 0.21 per cent of multiparæ.¹⁴ Other authors report as follows: Winckel,²² of 683 cases of eclampsia, found that 77 per cent were primiparæ; Lantos,²³ 78 per cent; Löhlein,²³ 0.85 per cent; C. Braun,²³ 0.86 per cent; Scanzoni,²³ 79 per cent; Kopetsch,²⁴ 75 per cent; Schauta,²⁵ 82 per cent.

In Goldberg's collection of 81 cases of eclampsia the average age of 70 primiparæ was $22\frac{3}{4}$ years and of 11 multiparæ $34\frac{1}{2}$ years. There were 17 under 20 years, 51 between 20 and 30, 12 between 30 and 40, and 1 over 40. The youngest was 15 and the oldest 45 years.¹⁴ Lantos, in 53 cases, observed 22 under 20 years, 19 under 25, 8 under 30, 3 under 35, and 1, 38.

Albuminuria and eclampsia with other uremic manifestations occur more often in twin pregnancies, in hydramnios, and in other conditions where there is an abnormal distension of the uterus and abdomen. Among eclamptic cases there are nearly five times the usual number of twins. Thus, distension obviously produces an increased counterpressure on the kidneys and ureters. As we have seen, eclampsia occurs eight times out of ten in primiparæ, in whom the abdominal walls are much more tense than in multiparæ, and therefore in whom there is much more likelihood of pressure on the other contents of the abdomen, especially the kidneys, ureters, liver, and blood vessels. I think we cannot fully agree with Halbertsma in ascribing all the uremic symptoms to the mechanical stasis of the urine from pressure of the presenting part (usually the vertex) on the ureters as they enter the true pelvis, but a considerable influence in the production of albuminuria and the kidney lesions must be accorded to the increased abdominal tension. The albumin appears in the vast majority of cases

during the last three months of pregnancy, when the uterus is encroaching upon all the organs of the abdomen and even upon those of the thorax. This increase of counterpressure must be felt most on the veins of the posterior part of the abdomen and the renal veins as well. That a general venous stasis exists is shown by the hypertrophy of the left ventricle, by the varicose veins of the vulva and legs, by the edema of the ankles, and by the digestive symptoms so often observed at this time. That the liver and kidneys participate in the general passive congestion there can be no doubt. All the pathological evidence, as far as it goes, is in this direction. The changes seen in the kidneys and liver can usually be explained by passive hyperemia. Those cases where albuminuria is observed in the early months of pregnancy can be explained by a catarrhal condition of the urinary passages¹ or by a pre-existing renal disorder. In this connection I may cite the researches of Meyer, who found that the ligature of the renal veins always produced albuminuria, and, further, that ligature of the veins of one side produced albumin from the ureter of that side only.²⁶ It does not disprove the uremic theory that in exceptional cases no albuminuria occurs before the first spasm, but that it has supervened after the convulsion. Eclampsia may in these cases be due to a pre-albuminous stage of nephritis.²⁷ The erect posture is perhaps responsible for the urinary disorders of pregnancy, as it is for inguinal hernia, varicocele, misplacement of the uterus, and many other ills of human flesh. In animals where the abdominal contents hang downward from the spinal column, there can be no pressure on the veins and surely none on the ureters. In such animals puerperal eclampsia is unknown.²⁸

The effect on the uremic symptoms of reduction in size of the uterus is striking in proof of the pressure and stasis theory. When the waters break there is usually a remission in the intensity of the symptoms, which is even more noticeable after the complete emptying of the uterus.

The theory of Halbertsma,²⁹ that eclampsia is caused by the pressure of the presenting part on the ureters and the consequent retention of the excretory products in the blood, is combated by the fact that convulsions and other uremic symptoms are often observed in presentations of the feet, breech, shoulder, or other part than the vertex, as well as cases of twins and hydramnios. Indeed, it seems to occur with proportionate frequency in all presentations. Goldberg ob-

served in his 81 cases of eclampsia 79 vertex presentations, 1 breech, and 1 transverse. The vertex cases, however, do not bear out Halbertsma's idea, because less than half of them had the head fixed in the superior strait. It is evident that, unless the head engages firmly in the pelvis, it can exert no more pressure on the ureters than could the breech or other part. He had one case where there was complete anuria for eight hours, evidently due to the pressure of the firmly engaged head on the ureters. Yet there was no eclampsia nor other untoward symptom, and complete convalescence followed. On the other hand, the autopsy seldom finds dilatation of the ureter,⁵⁹ and closure of these ducts during operations or from tumors never produces typical uremic eclampsia.⁶⁰

The influence of heredity has been traced by some writers. Three of Goldberg's cases came from a family subject to mental and nervous diseases, 14 came of parents having lung disease, mostly tubercular, and the sister of one had died of eclampsia during labor.¹⁴ Elliot mentions a mother and four daughters who suffered from eclampsia puerperalis.²⁹

The uremic origin of puerperal eclampsia is rejected by some authorities, notably Lusk,⁵⁰ who thinks the theory of reflex irritation is most satisfactory. He is influenced by the fact that albuminuria is present so often without eclampsia, and that sometimes eclampsia occurs without albuminuria. Lantos, of Budapest, from a study of 53 cases, believes albuminuria of pregnancy due to reflex irritation of the sympathetic and renal nerves. This irritation itself is due to irritation of the uterine nerve from enlargement of the organ. Eclampsia is a sort of acute peripheral epilepsy having its origin in the uterus.³¹ Prutz, from a study of 22 kidneys, concludes that kidney disease is not the cause in most cases.³²

In the minds of many, arterial spasm and consequent brain anemia account for the eclamptic symptoms. The cause of the vascular spasm, on the other hand, may be toxemia or reflex irritation from the uterine and pelvic nerves. This accounts for the quick attack and the relatively quick *restitutio ad integrum*, and the usual negative findings of the autopsy.² The favorable action of therapy addressed to the vessel spasm is thus explained.

It would be strange if one or more microbes had not been invoked as the cause of puerperal uremia, and so indeed several observers have reported. Favre made cultures from the white infarcts of the placenta and got micrococci, young cultures of

which produced spasms in rabbits.³⁴ Combemale and Cué, of Lille, conclude that staphylococci are a direct cause in cases following labor. They find that the soluble products of staphylococci are convulsive poisons, and consider the symptoms a variety of sepsis.³⁵ Blanc³⁶ in 1889 found in the urine of eclamptics a short bacillus whose culture produced in rabbits convulsions, dyspnea, and death. Gerdes examined the kidneys, lungs, aortic blood, and liver of eclamptics and found certain short bacilli, very poisonous to mice and rats, causing convulsions and coma.³⁷ These observations have not been verified by many others. Indeed, several writers state that the bacillus seen by Gerdes and the others was only the proteus vulgaris.^{38 39} Prutz³² examined for microbes each of his 22 kidney specimens, but with negative result. Chambrelent,⁴⁰ reporting 3 cases, states that the blood serum is more toxic than usual, but inoculations of blood and urine in the various media rarely yielded microbes, and then of different varieties. He thought these came from the air of the room. Similar cultures were found in the blood of healthy puerperal women. With Tarnier he studied the relative toxicity of the blood in puerperal eclampsia, and concluded that the toxicity is directly increased in proportion to the severity of the symptoms.⁴¹

What the poison is which produces the symptoms we call uremic cannot yet be definitely answered. The early writers thought it was urea,⁴² but then it was found that solutions of pure urea would not produce such symptoms except in amounts far in excess of any ever observed in nature. Herman⁴³ shows the close connection between the urea and the convulsions. A considerable diminution of urea causes severer spasms, and as the urea increases in the urine the spasms cease, while when the spasms go on and the patient dies the amount of urea does not increase. Carl Braun¹ considered the poison to be carbonate of ammonium transformed from the accumulated urea of the blood by the influence of some ferment of unknown character. On the other hand, except in a single case, neither urea nor carbonate of ammonium has ever been found in the blood of eclamptics, and experimentally a very large amount of either is required to produce convulsive symptoms.² Oppler modifies this theory by saying that it is not the retained urinary products in the blood which are the cause, but the products of an abnormal chemical metabolism in the tissues which cause the irritation of the central organs.² Kreatin and kreatinin seem

to play a considerable part in the intoxication. Landois experimented with these substances and with urate sediment and acid phosphate of potassium, and found that all caused spasms by action on the motor centres of the brain.⁴⁴ The first two substances, at least, are found in excess in the urine of eclamp-tics and those suffering from other forms of uremia. Hoppe found five times the normal amount of kreatin in one eclamptic case. The retention of urea, kreatin, and these other excrementitious matters in the blood must result from the inability of the kidney to eliminate them. It is probable, too, that the liver has much to do in this failure of elimination. The same cause which interferes with the secretory power of the kidney must also act on the liver, or, as Klebs and other observers think, the main factor may be the presence in the blood current of liver cells and the presence of liver-cell thrombosis in the portal venules and the renal arteries.⁴⁵ The pressure of the growing uterus is believed to squeeze the liver and thus cause this exfoliation of its epithelial cells.⁴⁴ As to the origin of that lesion of the kidney which determines the retention of poisons, there has been recognized reflex spasm of the renal arterioles, causing anemia of the kidney (the "pregnancy-kidney" of Leyden). Or, again, mechanical pressure of the gravid uterus on the abdominal and renal veins may induce passive congestion in the kidney and consequent impairment of its epithelium. The reflex irritation from the uterus would produce arterial spasm and anemia in other organs as well as the kidney, notably the brain.^{46 47 48} Indeed, the preponderance of the cerebral element in this reflex anemia may account for those cases of uremia and eclampsia without albumin or apparent renal disorder.

Several writers have observed a favorable influence upon the uremic symptoms following the death of the child, and have argued that the poisonous influence may come from the fetus.⁴⁹ It is certain that the symptoms usually improve as soon as the child dies,⁵¹ perhaps because thus a part of the manufacture of toxins ceases. Acetone passes from the fetus to the mother during its life; the maternal urine contains acetone and the breath smells of it.⁵⁰ It may lead to acute nephritis and to acute yellow atrophy of the liver. It is found in diabetic coma.⁵¹ Acetonemia, however, probably follows, like eclampsia, from uremia, and is not itself a cause of the latter.⁴⁴

Like convulsions seen in childhood, probably a certain number of cases resembling those of puerperal uremia may be

caused by reflexes from other parts than the genitals, especially the intestinal tract.⁵⁵ These, while not strictly under our subject, yet are caused by autointoxication from the soluble contents of the intestine and exhibit similar phenomena.⁵²

The liver as an emunctory organ may play a considerable part in the causation of so-called uremic symptoms, and the more that organ is studied of late the more likely it is that its influence in the phenomena of autointoxication is important. Certain cases of puerperal eclampsia and allied conditions are probably due to an insufficiency of the liver rather than of the kidney. The lungs, intestines, and skin are also emunctory organs of importance, the insufficiency of whose excretion may often be the reason for many symptoms of intoxication. Pregnancy causes certain changes in the position and condition of these organs. Resulting from the elevation of the diaphragm there may occur digestive disturbances, fatty liver, and portal stasis; from the pressure upward on the heart, hypertrophy of the left ventricle as well as circulatory changes in all internal organs. Therefore we may have intoxication and eclampsia without albuminuria, but at the same time the increased work of eliminating the large amount of toxic matter from the blood may induce in the kidney certain changes of structure which will show themselves in the character of the urine. The problem of autointoxication is not alone the anatomical condition of the emunctories, and of the renal emunctory in particular, but it consists in the sufficiency or non-sufficiency of these organs.⁵⁸

Certain changes in the placenta are noted in nephritis and albuminuria of pregnancy. Fehling¹⁵ collected 2,008 cases of labor without albuminuria from his observations in the clinics at Strassburg and Basel. Examination of the placenta in these showed white infarcts in 328, or 15 per cent. There were 91 cases of albuminuria, of which 44, or 48 per cent, showed placental infarcts. Thus, placental infarcts are nearly thrice as frequent in albuminuric as in normal cases. In true nephritis almost all placenta have one or numerous infarcts. These placenta differ from those of syphilis. The latter are pale and heavy, while the former are small, poor in blood, compact and thin. Often the fetus dies before birth, because the number of infarcts impairs the nutritive functions of the placenta. The cause of the infarcts is thought to be a nutritive disturbance of the decidua, mechanical stoppage of vessels, endometritis, etc. There are often fresh hemorrhages in the placenta of nephritis

and albuminuria, so that one sees red, yellow, and white infarcted masses at the same time.

The toxicity of the urine of eclamptics varies from time to time, but that of the blood serum increases enormously during the time of the convulsions. Ludwig and Savor reached this conclusion from the results of injections of serum and urine into animals.⁵⁷

Semmola⁶² practised subcutaneous injection of egg-albumen in dogs. For the first day or two there was no lesion of the kidney, but a continuance of the injections caused anatomical changes in the renal structure, ranging from hyperemia to chronic nephritis and large white kidney. Even the healthy tubules will allow the passage of albumin when in excess in the blood. He therefore considers albuminuria and nephritis as due to a dyscrasia such as acute infectious disease, toxemia, rheumatism, or gout. This theory fits well with the clinical facts of uremia in child-bearing. There is passage of albumin, sometimes for several weeks and often in large amounts, while the urinary sediment shows little trouble with the kidney, and even the postmortem examination demonstrates no marked lesions. It will also account for those cases of eclampsia without albuminuria. In these cases the vicious blood state overpowers the nervous system and causes the convulsions before the passage of albumin occurs in the urine. Semmola thinks that albuminuria arises from a modification in the diffusibility of the sero-albumin resulting from molecular changes in the blood.

When we come to consider the postmortem appearances in cases of puerperal uremia we find a wide diversity in the findings themselves and in the interpretation put upon them by authorities. Indeed, in a large number of cases accurate observers have found nothing abnormal in the gross or minute structural appearances in the kidneys. Thus, Brummerstaedt⁶³ collected 42 cases of eclampsia where the kidneys were examined, and found 7 healthy, 8 slightly hyperemic, and 24 showing slight exudation processes. Prutz³² collects 63 cases besides those above mentioned and finds that the appearances of acute nephritis predominate and that contracted kidney is rare. Acute inflammatory changes were observed 29 times, chronic exudative changes 14 times, interstitial nephritis 13 times, sound kidney 5 times, and fatty and granular changes each once. Prutz examined microscopically the kidneys of 22 patients dying of puerperal eclampsia. From his examinations

he is inclined to think that only about 8 show enough kidney changes to account for the symptoms of uremia.

It is not in the kidney alone, however, that we are to look for anatomical evidence of lesions. Pilliet,⁶⁶ in all of 12 autopsies on eclamptic cases, found in the liver hemorrhagic foci analogous to those found in the kidneys in scarlatinal and erysipellatous nephritis. Schmorl⁶⁶ found there foci in 15 cases; also changes in the kidneys, hemorrhages in the brain, and, in 5, necrosis of the pancreas and heart. In 4 of the children were extensive changes in the renal epithelium. In 31 autopsies Löhlein¹² noted microscopical changes in the liver 5 times. Knowledge of the fact that we may have multiple liver-cell thrombi gives a point of prognosis in cases where jaundice appears.

In the brain are found most often anemia, edema, and diminished consistence; in the lungs, edema constantly and often emphysema; in the heart, usually emptiness and flaccidity; in the spleen, enlargement.¹

In Dührssen's series of 200 cases of puerperal eclampsia there were 42 deaths. The postmortem examination of the kidneys showed nephritis in all but one, which had renal anemia.⁴⁴ Anemia of the kidneys is always found, according to Leyden, who introduced the terms "pregnancy-nephritis" and "pregnancy-kidney." The cause of this anemia is taken to be the spasm of the kidney arterioles.^{46 47 48} This spasm is caused by the reflex irritation of the nerves of the genital tract. In the later months of pregnancy, when the symptoms of "pregnancy-nephritis" are most common, these irritations are at the maximum—namely, great distension of the uterus, the head pressing into the pelvis, and the uterine contractions. The sum of all these irritations, perhaps reinforced by some particularly urgent neurotic impression, starts the spasmodic arterial anemia of the kidneys. Following the anemic condition degenerative changes occur, often not marked enough for even microscopic demonstration, but sufficient to cause albuminuria and other secretory disturbances which lead to a faulty elimination of urea and other toxins of the blood. Similar anemia of the liver may interfere with the excretory functions of that organ and cause the not infrequent lesions found in it. Consequent upon this toxemia may result the symptoms so often observed in the toxemia of pregnancy: nausea and vomiting, edema or anasarca, headaches, neuroses, cardiac symptoms, eclampsia, and even mania.

The autointoxication of pregnancy exhibits itself in all phases, from the slight edema of the feet and headaches to the severest cases of eclampsia and puerperal mania. A typical case I herewith report from my practice:

CASE I.—A. P., age 18, single, primipara, in the eighth month of gestation. This patient, a girl of good family from a neighboring State, came to Chicago to hide her shame from her acquaintances at home, and was under the care for several weeks of a neighboring practitioner against the time of her travail. For the last few months she had noticed a gradually increasing edema of the feet and ankles, extending up the legs. For the last month she had severe nausea and vomiting, with pain in the right side. Lately she had passed a diminished amount of urine, but this had not been examined chemically.

In the absence from the city of her engaged attendant, I was one day hastily summoned to her boarding-house, where I found lying on the bed a small young woman in a state of unconsciousness, with abdomen distended to full-term size and legs very edematous as far as the hips. She had already had two convulsions and had a third soon after my arrival. Having been uninstructed by the messenger, I was unprovided with instruments or drugs. Meantime, while awaiting the arrival of assistance and materials, I gave one-fourth grain of morphine subcutaneously. During the fourth and succeeding convulsions chloroform was freely given. The position of the fetus was O. D. P.; the os was not dilated nor the head engaged, and labor had not begun. The fetal heart was never heard. The small amount of urine drawn by catheter showed abundant albumin by the heat test made at the bedside. Subsequently the microscope showed numerous hyaline and finely granular casts, and leucocytes and a few red corpuscles. After the arrival of Dr. E. T. Edgerly, who answered my summons, the fifth convulsion occurred, and complete anesthesia was induced preparatory to terminating the labor as rapidly as possible. There were no more spasms. We concluded to dilate the os manually, do version, and extract by the feet. This proved a most difficult task. The vagina was so small as hardly to admit my hand, and the bony outlet was narrow. The dilatation of the os by the fingers was not easy, and we had no Barnes bags nor Tarnier écarteur. I was able to reach one foot and, after great difficulty, to pull down a second. I then pulled the legs down into the os and the feet into the vagina. The cord was tightly pulled into the fold between the legs, and

on account of the pressure of the partly dilated os I could not disengage it. Therefore I tied in two places and cut between, trusting to rapid extraction to save the child, if not, as I suspected, already dead. The head became arrested in the pelvis, and each of us failed to deliver it either by the finger in the mouth or by the Prague method. Forceps succeeded after three trials. The child, of course, was dead. It was a male, seemed at full term, and weighed six pounds. The delivery occupied two hours, being difficult at every step. The mother was somewhat shocked at the end of it. The placenta followed immediately and the uterus contracted well. Treatment was addressed to the shock, and no attempts were made to repair the lacerations.

Four hours after delivery there was some slight twitching of the right hand, and an hour later, after taking hot water, she vomited some dark-brown matter. She passed a fair night, the pulse gradually improved, and she took a little milk. She was catheterized twice during the first eighteen hours after delivery, each time voiding three ounces of albuminous urine. During the second twenty-four hours two pints were drawn, and on the third day she urinated freely, while the edema began perceptibly to diminish. The urine contained a trace of albumin, few casts, and much pus, probably from the lacerations. Cultures of the sediment produced only the streptococci. On the fourth day the temperature rose to 101° F. and the breasts contained a little milk. Binders were ordered and salts given to free catharsis. The fever soon subsided, and convalescence thereafter was uninterrupted under the influence of free diuresis from copious water-drinking. Four weeks after the labor she went home, still having a trace of albuminuria; a few weeks later I received a specimen of urine that was entirely negative, and a few months after I learned of her complete restoration to health.

Here was a case in which no examination of urine had been made and no eliminative treatment instituted. Doubtless, several months earlier, signs of pregnancy-nephritis would have been found if sought, and prophylaxis might have saved her from the dangers of eclampsia and of forcible delivery. Our treatment is open to the criticism of the followers of the French school, who advise waiting for labor to begin and refraining from accouchement forcé. Criticism may be directed to my use of podalic version instead of high forceps. I chose version, first, because the os was not sufficiently dilated for the

easy application of forceps; second, because version and traction on the feet also help to dilate while extraction is being applied; third, because high forceps are more liable to injure the uterus; and, lastly, because personally I can more easily perform version than I can the high forceps operation.

The next case which I report is also that of a patient who exhibited many signs of pregnancy-nephritis, but who had no prophylactic treatment during pregnancy because of her unwillingness to submit to treatment. The termination of this case was fatal, but I think milk diet and treatment directed to the uremic condition during the later months of her pregnancy, when the condition was recognized, might have made our task during the labor more easy and perhaps have prevented her even from having eclampsia at all.

CASE II.—Mrs. S., age 21, a plump, healthy primipara. The family and previous histories are negative. In the latter part of March, 1893, she engaged my partner, Dr. Denslow Lewis, to attend her in her forthcoming labor, estimated to be due April 23. The routine examination of the urine showed albumin in large quantities and high specific gravity. She was at once ordered on milk diet and was prescribed diuretics and laxatives. The advice as to diet was not followed, and little medicine was taken in spite of frequent warnings as to the serious state of affairs. The patient's mother was a graduate of law, an erratic woman, who thought her knowledge of medicine little inferior to that of any physician, and she had complete influence over her daughter and son-in-law. No warning nor persuasion could convince them that there was any reason to expect anything more than the normal phenomena of labor.

Daily examinations of the urine showed large amounts of albumin. Edema was not more than is usual at the last month of pregnancy. The daily amount of urine could not be ascertained, but it seemed not to be very scanty.

April 9, 3:30 A.M., the doctor was called on account of the onset of labor pains. Labor was found to be well advanced and the os the size of a silver quarter-dollar. It progressed well for a primipara. At 5:30 A.M. the doctor went to his office for forceps and other implements, remaining away for about an hour. Responding to a hasty summons, he learned that the patient had just complained of a severe headache and had then been seized with a spasm involving the whole body. The os was now thinned and dilated to the size of a silver half-dollar.

It was further dilated with fingers and Tarnier's écarteur. Axis-traction forceps was applied, delivering the fetus in about half an hour with a partial tear of the perineum. Several spasms occurred during the delivery and for an hour afterward, in spite of chloroform anesthesia. At the onset of the spasms the mother of the patient became willing and anxious to have all the professional and nursing assistance possible. A nurse was obtained and I was called, arriving about 8:45 A.M. The placenta had been delivered and the uterus was well contracted. We gave chloroform at the beginning of each spasm, with the effect of partially controlling them, but without diminishing their frequency. One-tenth grain of pilocarpine was given subcutaneously at 9:15 and again at 9:30, producing little sweating, but profuse salivation and secretion of mucus in the respiratory passages. At 9:50 another spasm. At 10:45 forty grains of chloral were given by enema. At 11:10 another spasm. At 11:15 chloral enema was repeated. At 12:30 twenty more grains of chloral were given as before. After this there were no more convulsions, but a gradually deepening stupor came on. At about 11 A.M. we rigged up a hot-air bath by means of a stovepipe, a lamp, barrel hoops, and blankets. This induced profuse sweating and easier breathing, but some quickening and weakening of the pulse. From 11:30 to 12 there was some cyanosis, which soon disappeared.

At 4 A.M. the catheter had drawn a few ounces of urine. Three other times during the day the bladder was found to be empty. Several enemata of Epsom salts during the day, as well as croton oil and large doses of calomel, failed to cause action of the bowels. Most of the day the patient remained in a stupor with stertorous breathing. The hot-air bath was removed at 2 P.M. and replaced at 7, the second time producing no diaphoresis. Pilocarpine again failed to do more than fill up the respiratory passages with thin mucus. From 5 P.M. the pulse grew steadily weaker, and the woman died quietly at 9:30 P.M. without having regained consciousness. The child, a vigorous boy, lived for several months.

Here is a case of a healthy young woman, whose pregnancy up to the last month was apparently normal, dying within fifteen hours of acute toxemia. Indeed, if not for the routine examination of the urine a fortnight before labor, there was no symptom until the first spasm just before delivery. Note-worthy is the failure of the attempts to induce elimination even by active medication by cathartics, as well as the failure of

pilocarpine to produce sweating. Samples of the same package of the latter drug were proved active both before and since.

There may be room for doubt as to the propriety of giving so much chloral. After the last dose the convulsions ceased, but a state of stupor ensued which persisted more or less until death. In almost all reported cases death comes during the stupor, even when no large doses of narcotic drugs have been given. The uremic poison seems to produce an epileptiform state—viz., of convulsions followed by coma. In this case we were unable to set up by any treatment enough vicarious elimination to carry off the hemic toxins.

While in general the presence of the fetus in the uterus and the supervening of labor pains seem to be the direct causal factors in most cases of puerperal eclampsia, yet in a considerable number of cases the convulsions begin after the delivery, sometimes without the least premonition even in the urine.² In Goldberg's series of 81 cases of eclampsia,¹⁴ 13 had the first convulsions during the puerperium. The following case is one where spasm occurred without warning of any kind and a few hours after the attending physician had left. For permission to report this case I am indebted to Dr. M. W. Bacon.

CASE III.—Mrs. McN., age about 25 years, primipara. First stage lasted about ten hours; forceps was applied to deliver the first twin, a male, about four hours later. The second birth, that of the female twin, soon followed spontaneously. The urine was not examined before labor. No sign nor symptom of uremia was present, and urine was passing freely at all times. Six or eight hours after the delivery of the second child, and some hours after Dr. Bacon had gone home, I was summoned in haste on account of a convulsion then in progress. It had almost ceased when I arrived, but the comatose condition lasted a few minutes after my coming. I gave one-tenth of a grain of pilocarpine subcutaneously and produced copious sweating. Dr. Bacon, who arrived about an hour later, repeated the dose and also gave jalap and calomel in free doses. There was only one spasm, and urine passed freely a few hours afterward. Albuminuria persisted for a few days, but the patient made a good and speedy convalescence.

The urine, in cases of puerperal and pregnancy uremia, is generally acid, contains albumin in varying amounts, usually shows fibrin casts and blood corpuscles. The quantity of the albumin usually has an intimate relation to the extent, intensity, and duration of the acute Bright's disease, but not so

constantly to the violence of the eclampsia. The albuminuria, however, usually increases toward the end of pregnancy. The urea is constantly diminished, sometimes entirely wanting. The more acute the nephritis the darker the urine and the more numerous the blood corpuscles. Eclampsia in the second half of pregnancy has generally premature labor as a result.¹ There is a class of cases where the urine is free, even amounting to polyuria, and the specific gravity is low while the albuminuria is slight, but which result in eclampsia, sometimes fatal.⁷ Such cases are very liable to take even the careful practitioner unawares, because the albuminuria may be easily overlooked in a hasty examination. A low specific gravity with a trace of albumin, even when there is apparently a large quantity of urine passing, should lead the obstetrician to get a measurement of the daily amount and estimate the urea, for this last is a better indication of the integrity of the kidneys and eliminative organs than even the presence of albumin or of casts. During the increased metabolism of pregnancy there should be an increased daily amount of urea voided, so that any notable diminution is a sign of danger.

Prophylaxis, especially dietary, fortunately has a marked influence upon the progress of a case of the uremia of pregnancy. For this reason, if for no other, there should always be frequent examinations of the urine of all pregnant women, especially primiparæ. The two following cases are examples of benefits of the ounce of prevention.

CASE IV.—Mrs. J. E. G., age 27 years, primipara; nervous temperament; large, healthy woman who had seldom had a sick day. The last menses occurred June 17, 1894. In January, 1895, the first examination of urine showed a large amount of albumin, and inquiry developed the fact that she was passing daily small quantities of urine. There was slight edema of feet, ankles, and hands, as well as some puffiness of the face. She complained of slight headache and a little return of nausea. Throughout her pregnancy, as throughout most of her life, she had thought her health excellent, but she had eaten largely of meat during the pregnancy. I ordered an absolute milk diet and cream-of-tartar water freely. At that time the amount of urine passed in twenty-four hours was less than one pint and the total amount of urea was much diminished, although the relative amount in any one specimen, as well as the specific gravity, was high. A faithful persistence in milk diet for three weeks resulted in a diminution of the edema and com-

plete subsidence of the uremic symptoms. The daily amount of urine was 2,000 to 2,500 cubic centimetres; the albumin was one-quarter of one per cent; the urine was not below normal; there were a few hyaline and granular casts; the specific gravity was 1010. A week before this time the urine for one day was only 1,200 cubic centimetres, the urea about 0.15 per cent, and specific gravity 1012. That day she had headache and nausea, with cramps in the lower abdominal muscles and legs. A hot bath and alcohol sweat resulted in the passage next day of 2,000 cubic centimetres and a disappearance of all symptoms. A bath and sweat were ordered every third day for a fortnight. Early in February she thought the fetal movements were not so active as before, but they were still perceptible up to the day before labor. There was a slight reddish discharge from the vagina.

March 1, 1895: Slight pains began about midnight and continued until morning, but were not severe enough for her to send for me or her nurse. The child was born quickly at about 10 A.M., ten minutes before my arrival, dead. It was blue, but not macerated, and efforts at resuscitation were futile. The placenta, of small size and without infarcts or other abnormal characteristics, followed spontaneously in fifteen minutes. The cord was of small calibre. The mother made an uneventful convalescence; albumin and casts disappeared from the urine in a few weeks, and she has never had any symptom of uremia since. About eighteen months afterward she had a healthy baby in a manner entirely normal as regards every symptom from the beginning of the pregnancy.

Autopsy: Female fetus of eighth month, length 17 inches, weight $5\frac{1}{4}$ pounds; nails to ends of digits; abdomen distended and dull on percussion; vulva open and everted; skin and subcutaneous tissues of chest and belly about one-third of an inch thick, with edema; abdominal and pleural cavities full of serum; pericardium contains about half a drachm of serous fluid; vein of round ligament patulous; bladder contains about half a drachm of urine; colon contains meconium, with which also the body is freely covered; lungs contain no air and sink in water; the kidneys are enlarged. The cortices of the kidneys are pale and the pyramids injected; in the left kidney the cortex is somewhat swollen. All the internal organs are passively congested.

Microscopical examination by Prof. Ludwig Hektoen gave negative results. There was some parenchymatous degenera-

tion of the epithelium lining the convoluted tubules; the lungs were atelectatic; no change in liver or spleen.

CASE V.—Mrs. W., age about 32 years, tertipara. There is nothing of interest in her previous family history. She has never had any serious illness nor trouble in labor nor in previous pregnancies. Early in March, 1892, I was engaged to attend her in her third labor, estimated to be due in the middle of July. The routine examination of the urine was negative. Late in May she called on me, complaining of swelling of the feet and a diminished excretion of urine. Examination showed considerable albumin, normal specific gravity, and abundant sediment consisting mostly of bladder and vaginal epithelial cells, leucocytes, and few hyaline and granular casts. I ordered a milk diet and an iron tonic. The urine was examined every few days and remained much the same, except for the disappearance of the flat epithelium.

June 14 I was called in the night on account of pains in the abdomen simulating labor pains. Under chloral and belladonna these quieted. I ordered a hot bath twice or thrice a day and had the nurse summoned. The baths caused her to sweat in a gratifying manner, but the amount and condition of the urine remained unchanged. A few days later I ordered chloroform water for a diuretic, as recommended by Charpentier. The daily amount of urine increased somewhat, but the albumin did not change. The urea all the time was only slightly diminished. The milk diet and baths were very irksome to the patient, but otherwise she did very well. June 30 I was called and found labor in progress. The course was normal and speedy. The child, a female, was small but well developed, and is alive and well to-day. The evening before the labor the mother passed urine very freely and continued so to do for several weeks. The edema vanished in a week, as well as the albuminuria. Several examinations since for the last four years have been negative. About three years ago she consulted me for a diminution in the amount of urine, but repeated examinations showed nothing abnormal and the oliguria soon disappeared.

A noteworthy feature of this case is the occurrence of uremic symptoms in the third pregnancy, while in the two former, although the urine in each was carefully examined, there was not so much as a trace of albuminuria.

The vast majority of instances of uremia of the child-bearing period show symptoms during the latter half of pregnancy and

usually after the seventh month. It is uncommon for symptoms to appear before the fifth month. Occurring before the seventh month they are always fatal to the fetus, and therefore call for no modification of the treatment in the direction of preserving the life of the offspring.⁴⁴ The following case is an example of the setting-in of fatal uremia in the first half of pregnancy.

CASE VI.—Mrs. W., age 18 years, primipara; always in good health; pregnant about four and a half months. She had the usual morning nausea in the early weeks of pregnancy, and at the end of the third month had an attack of severe vomiting, epigastric pain, headache, and anuria lasting several days. She seemed to thoroughly recover her health, although there is no record of any examinations of the urine. She never had any edema. At the time mentioned above she came under the care of Dr. George V. Hilton—to whom I am indebted for permission to report the case—suffering from the same symptoms as during the previous attack. There was no urine passed for two days, in spite of diuretics and diaphoretics. There was almost constant nausea and frequent violent attacks of vomiting, with severe headache and epigastric pain. Two days after the beginning of the attack I saw her in company with Dr. Hilton late in the night. She had been comatose for several hours and we found her in that condition with a very weak pulse and a shallow respiration. A few drops of urine drawn by the catheter were only moderately albuminous. Her condition was so apparently hopeless that, in view of the time necessary to empty the uterus at that early stage, we determined to await a possible rally. She was ordered a sweat bath. She died during the next morning without recovering from the coma. No autopsy was permitted.

The failure of the urinary secretion may take place quickly, and the bladder being found full does not prove that urine is still being excreted by the kidneys. Richardson⁷ reports a case of primipara, confined normally, from whom, within five hours later, were drawn 40 ounces of urine. This was pale, specific gravity 1007, and not albuminous. One and a half hours afterward she had headache, epigastric pain, and a series of convulsions. Five hours after the last catheterization she was catheterized again and three ounces of smoke-colored urine were drawn, specific gravity 1022, albumin $\frac{1}{2}$ per cent, and containing blood, granular and epithelial casts. Before thirty-six hours had gone by the symptoms, under treatment,

had already disappeared and the urine had become normal. Mother and child were both reported well. Another case is reported by Gage in which the period of diminished urine was not over six hours; both mother and child died.

The relation of albuminuric retinitis to the pregnant, parturient, and puerperal states is important. The danger to sight is great, although in the retinitis albuminurica of pregnancy the disease is less severe than in other renal disturbances. The appearances in the retina are hazy optic discs, white patches in the macular region, and more or less hemorrhage, although often there is complete blindness without visible alteration in the retina. This blindness frequently ends soon after labor, and the longer it lasts the worse the prognosis for sight.⁶⁸

Judging from the average of the majority of observers, we may say in general that of 10,000 pregnant women 500 will have albuminuria, of these 500 albuminurics 60 will have eclampsia, and of these 60 eclamptics 12 will die.

The lethal dangers of the uremia of pregnancy arise mostly from placental disturbances or through the occurrence of eclampsia.⁶⁹ The outcome depends largely upon the apparent severity of the immediate symptoms. As to the proportion of cases of pregnancy-kidney and pregnancy-nephritis which eventuate in chronic or recurring renal disorder, there is little definitely settled by authorities. It appears from the researches of Leyden⁷⁰ and also of Ries⁷¹ that granular atrophy is not a very infrequent ultimate result of renal disturbance arising in pregnancy. Koblanck,⁶⁹ in an article on the "Prognosis of Pregnancy-Nephritis," made some investigations in Olshausen's clinic in regard to this point. He studied 77 cases in which he had an opportunity to examine the urine some time after the labor, from six weeks to five years—averaging about two years afterward. In these cases the history showed that renal disease had not existed before the labor. Three-fourths of the women were young primiparæ. Most of them had severe symptoms, being brought into the hospital in spasms. The later examinations were chiefly as to pulse, heart, and urine. In the urine of 48 a normal condition obtained; in 13 there were traces of albumin with very few casts; in 12 the urine showed "catarrh" of the uropoietic system, and in 5 only was there a true nephritis persisting. Of the 46 healthy women, 15 had borne children again without symptoms of uremia and 5 were pregnant at the time of examination. Neither the persistent nephritis nor the persistent albuminuria seemed to have any relation to

the severity of the symptoms in the first place. There was only 1 case of the 77 which had uremic symptoms recurrent in later pregnancies. She was examined eight years after the first delivery, after having three out of four pregnancies complicated with renal symptoms, and at this final examination the urine was normal. From Koblanck's figures, then, it appears that continuance of renal disorder after the labor, or recurrence of the nephritis in future pregnancies, is comparatively rare.

In any individual case the prognosis is worse the earlier in the pregnancy the uremic symptoms begin, on account of the difficulty in extracting the fetus, as well as because the causal factors must continue for so long. The occurrence of eclampsia must be taken as the indication of the culmination of the uremia. In very few fatal cases has there not been eclampsia sooner or later. Indeed, the spasms may be few or very slight, while the dominant feature is deep coma, which will end in death unless overcome by Nature's forces or treatment. The condition of the pulse is of great prognostic importance. In favorable cases it is impaired during the attacks, but full, regular, and not greatly accelerated during the intervals. Even a hard pulse is not so bad a sign as one which is weak and fast, especially between the attacks or after the termination of the labor.² Amaurosis occurring during pregnancy is a bad sign, both as indicating the imminence of spasms and for its danger to the eyesight in the future. According to the tables of Löhlein¹² the greatest mortality is among the multiparæ in whom the eclampsia begins before labor, and the least among the primiparæ first affected post partum. The former were 12 out of 34 and the latter 7 out of 60. In any case the prognosis is best if the outbreak occur first during the puerperium, and worst during the pregnancy. Goldberg's¹⁴ tables show a mortality of 39 per cent in the antepartum, 29 per cent in the intrapartum, and 19 per cent in the postpartum cases. In the Boston Lying-in Hospital cases their figures were respectively 38 per cent, 23 per cent, and 19 per cent.⁸

The life of the fetus is in danger so long as it is nourished by the poisoned blood of the mother.¹ Löhlein and Scanzoni had infant mortalities in cases of eclampsia of the mothers of 44 per cent, Schauta of 24 per cent, Winckel of 77 per cent,² Dührssen of 54 per cent, and the Boston Lying-in Hospital of 24 per cent.

The practical question is not so much whether the convulsions begin before, during, or after labor, but whether emptying

of the uterus causes them to cease. Dührssen, out of 118 cases, found that the eclampsia stopped immediately or soon after emptying the uterus in 105. Of these 105 cases 17 mothers died, a mortality of 16 per cent. Of the 13 cases where the eclampsia increased post partum 5 died, a mortality of 39 per cent.

A not very infrequent sequel of uremic poisoning in the pregnant woman is mania or less severe psychosis. It seems to be an intoxication neurosis, like the mania following puerperal infection. Olshausen⁷² observed psychoses follow in 11 out of 200 cases of eclampsia. From his own and the figures of three other authors he concludes that such mental disorders follow in 6 per cent of cases of puerperal eclampsia. There seems to be little relation of the severity of the uremic condition to the mania, although the latter seems to follow more often cases of deep and prolonged sopor. The patients wake to consciousness, but in an impaired mental state, somewhat analogous to the psychic disease which may follow poisoning by alcohol, morphine, or sepsis. Most of such cases recover in a few days or weeks. The mental abnormality in some cases may be only a more or less marked amnesia.⁷³

That women suffering from uremia of the child-bearing process are more liable than others to sepsis, except as they are more liable to operative interference and to the less careful asepsis engendered by haste, does not seem to be shown. The coma and convulsions may cause inhalations of mucus resulting in broncho-pneumonia or other infection of the lung, which also is favored by the venous stasis in that organ. Placenta previa rarely coexists with uremia, and it is possible that the free bleeding due to the former may have a favorable influence upon the course of the latter.⁷⁴ As placenta previa occurs only about once in 1,000 cases of parturition, and then six times oftener in multiparæ than in primiparæ, while the grave uremic accidents occur chiefly in primiparæ, it follows that their coincidence must be extremely rare.

Prophylaxis is of the utmost importance in the treatment of the uremia of pregnancy, since by proper dietary very many cases of severe intoxication may be nipped in the bud. The occurrence of albuminuria or other symptom of faulty elimination, such as low specific gravity, small daily amount of urine, headaches, nausea, etc., should be the signal to put the patient at once on a milk diet, exclusively milk for a while until the cessation of the alarming symptoms indicates more latitude in

the menu. The diet throughout the rest of the pregnancy should contain little of the red meats or other food likely to cause an excess of the nitrogenous contents of the blood. The pregnant woman with albuminuria should not travel, for fear of the excitation of the genital organs produced by the jarring of a railroad train.⁷⁵ Iron and other tonics should be used for the anemia which is often present. Mild diuretics and drinking of much water should be advised. Warm baths or Turkish baths are useful and not at all dangerous unless in excess. Laxatives, preferably the milder salines, should be given as often as needed to keep the bowels free.

Should prophylaxis fail there comes up the question of interference with the pregnancy. If, in spite of proper effort and of proper co operation on the part of the patient, the symptoms should continue to become more grave, especially should the daily amount of urine continue to diminish and the total urea to remain low, I think the weight of present authoritative opinion would advise induction of labor. As in the incoercible vomiting of pregnancy, each case must be duly considered by itself as to when the time for interference has come. Of course the method employed to induce labor will depend upon the time of the pregnancy. As the very first labor pains are likely to excite convulsions, it is imperative to be as quick as possible. Manual dilatation, Barnes' bags, instrumental dilatation, Tarnier's *écarteur*, or the deep cervical incisions of Dührssen will be used according to the circumstances of the individual case. Charpentier and the French as a rule advise waiting for the natural supervention of labor and ending it naturally if possible.⁷⁶ They entirely discard forced labor and Cesarean section in eclampsia, preferring the use of chloral to the point of narcosis. Dührssen and many of the Germans advise immediate and even forcible delivery in eclampsia or when that is imminent, always under deep chloroform anesthesia. Between these comes the great body of the profession, which adopts a middle course within these wide limits.

The fact that, in eclampsia continuing after the labor, there seems to be a decided benefit observable from free hemorrhage points to the rationality of blood-letting at any time when spasms occur. This procedure seems more beneficial in those acute cases accompanied by much edema, large amount of albumin, sudden onset of the uremic symptoms, full bounding pulse, and cyanosis. Bleeding seems rational in such an array of conditions if ever, whatever the cause of the convulsions

may be, whether uremia, heat stroke, epilepsy, or what not. Without doubt it has almost always, under such circumstances, been immediately beneficial in puerperal uremia, but there is question whether it does not do more ultimate harm than good. The relief may be immediate; but as the volume of blood returns to normal by the imbibition of water from the alimentary canal and the tissues, or from hypodermoclysis, the tension returns,² and we are then confronted by the former conditions with the addition of an acute anemia. According to Leyden's idea, the very lesion in the kidney is anemic. Therefore, while it may be justifiable in the plethoric to do phlebotomy in order to gain time for the action of eliminative drugs and for obstetric interference, yet the procedure is dangerous and should not be carried to any great length. Venesection was the treatment in Guy's Hospital before 1868, and the mortality in puerperal eclampsia was 30 per cent. Since then it is $20\frac{1}{2}$ per cent under the treatment by chloroform.⁷⁷

Since the overwhelming weight of opinion is that the eclampsia is caused by faulty elimination, and since the vast majority of authorities recommend measures directed to favoring elimination by the skin, bowels, and kidneys in the early stages of the intoxication, it would seem to follow that radical means ought to be employed in that direction when the graver attacks come on. Such is the justification for the use of pilocarpine, hot air, elaterium, and the drastic hydragogues. One should remember in employing these measures that they all tend to weaken the heart and that upon the maintenance of the cardiac strength depends our hope of recovery. They should be used only with caution and in cases where the pulse is of good quality, unless they be used as forlorn hopes after other measures have failed.

Veratrum viride has been used, especially in this country, since its introduction by Fearn, of Brooklyn, in 1869,⁸⁶ in cases of uremic attacks of all kinds, and it has vigorous partisans in the convulsions of child-bearing. Jewett⁷⁸ refers to 22 cases, in only 1 of which did convulsions recur after treatment had been established. He advises its use subcutaneously in doses of ten to twenty minims until the pulse rate has been brought under 60, when, in his experience, spasms will not occur. Similar good results have not been obtained in England from *veratrum*.⁷⁹ In American literature there are very many favorable reports of cases, but nobody has, as far as I know, published a series of cases, covering any length of time, giving

both sides of the statistics of the use of veratrum. Many who recommend veratrum advise and use also rapid evacuation of the uterus under chloroform anesthesia. In an affection where so much depends upon maintaining the force and regularity of the heart, it seems to me very heroic and dangerous treatment to employ to its toxic action so powerful a cardiac depressant as veratrum, with the aim of controlling the spasms, which are themselves only a symptom of serious poisoning of the blood and of a vicious nerve state kept up by the presence of the contents of the gravid uterus. It would require very encouraging statistics indeed to induce me to trust alone to any method which avowedly only controls the visible explosions of the disease, to the exclusion of measures calculated to eliminate the poison, if possible, and to terminate as soon as safely can be the condition of pregnancy which is at the bottom of the whole trouble.

In 1887 Gustav Veit⁸⁰ strongly recommended morphine in large doses for puerperal eclampsia. He begins with a dose of half a grain, and follows it soon with a smaller dose, unless the narcosis is complete. He gives another dose as soon as consciousness begins to reappear, and keeps the patient in that condition for hours, or even days, until the child is born and the tendency to spasm ceases. No other treatment is recommended. Olshausen favors the morphine treatment, but would permit forceps or version in the interest of the child, if these operations could be easily performed. The action of the narcosis paralyzes the voluntary muscles and thus stops the attacks, which in themselves tend to increase the arterial pressure and consequently the morbid condition in the kidneys and in the brain. The prognosis for both mother and child is said by the advocates of this treatment to be better than by any other method. Löhlein¹² claimed that it had reduced the maternal mortality to 14 per cent and that the infant mortality had been reduced to 41 per cent. Dührssen⁴⁴ criticises Löhlein's statistics both as to their accuracy and on the ground that they embrace too few cases to be of value. In the latter's collection of 325 cases of eclampsia from all German clinics were 86 cases where the morphine treatment had been used, not, however, by any means to the exclusion of other measures. In these 86 cases, 12, or 14 per cent, died, *excluding complicated cases*. The general mortality of the whole 325 was 19 per cent. Some difference of opinion will always exist

as to what cases, in a series given to prove percentages, ought to be excluded on account of complications.

The advocates of prompt obstetric interference in cases of the graver uremic manifestations in pregnancy base their claims upon various considerations. In the first place, it is known that in the vast majority of cases the spasms cease or grow less severe as soon as the child is born, therefore the sooner that is brought about the better for the patient. The chief reason for not inducing labor is that the manipulations to that end will of themselves precipitate convulsions. This is not the case if the patient is under complete narcosis. Therefore, if narcosis be complete and the operation be done quickly, the patient is soon brought out of the condition of intoxication and of spasm and stands a better chance of recovery than if allowed to remain therein while the convulsive phenomena are palliated by cardiac depressants or by prolonged dosing with large amounts of morphine. The great trouble, especially in young primiparæ, who are the most subject to these attacks, is that it is very difficult to artificially empty the uterus with despatch. The earlier the eclamptic seizures begin the harder to induce the labor. The accouchement forcé is apt to be dangerous of itself. Dührssen devised an operation to overcome this difficulty. In the primipara, after the head has become engaged in the pelvis toward the last few weeks of pregnancy, the body of the cervix becomes effaced, and though the os may be as tight as a pinhole, yet the cervix is stretched over the protruding head in a thin layer. The main time in inducing labor is taken up by the dilatation of the os. Dührssen⁴⁴ makes incisions laterally, and, if necessary, anteriorly and posteriorly, completely to the vaginal attachment through the cervical tissue, thus entirely and at once obliterating the period of dilatation of the os. Then he turns or applies high forceps and delivers at once, perhaps doing episiotomy if there is difficulty in passing the head over the perineum. He claims that the incisions thus made usually heal without incident or can be repaired like ordinary lacerations. The patient is thus at once brought into the puerperium, and, if the eclampsia continues, the other means mentioned may be used against it with the very favorable circumstance that now the pressure of the distended uterus is eliminated from the causation. In a symposium at the Boston Obstetrical Society these conclusions were reached: that nothing is gained by delay in puerperal eclamp-

sia, that the continuous administration of anesthetics has not been known to allow of the reappearance of the convulsions, and that slow manual dilatation and emptying of the uterus has been repeatedly successful.⁸¹ Dührssen's method now makes this slow manual dilatation unnecessary. In multiparæ the internal os is usually not open nor is the cervix flattened out over the head, so that in such cases manual or instrumental dilatation must be employed instead of the deep cervical incisions. Where immediate delivery in eclampsia is imperative even Cesarean section has been strongly recommended.⁸² Puech⁸³ considers that in a pregnant woman, if the albuminuria persist in spite of milk diet, and especially if it be accompanied by gastro intestinal symptoms and dyspnea, the maternal interests demand the induction of labor. Indeed, modern opinion seems to be tending in this way, toward ending the pregnancy as soon as it is evident that the uremic symptoms are not being controlled by the dietetic and diuretic treatment, and not to wait until the graver accidents, such as coma or eclampsia, come upon us unawares.

4426 LAKE AVENUE.

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ACUTE FIBRINO-PURULENT PERITONITIS IN INFANTS.¹

BY

GEORGE N. ACKER, M.D.,
Washington, D. C.

THE two cases of acute fibrino-purulent peritonitis that I shall report illustrate the fatal character of this disease in infancy. Holt, in his masterly work on "Diseases of Infancy and Childhood," gives the following analysis of 108 cases of acute peritonitis in children, not including those associated with appendicitis: Fibrinous, 22; serous, 22; purulent, 46; tubercular, 18. The majority of these cases occurred after the fifth year of age.

There are numerous causes assigned for the production of acute peritonitis, such as exposure to wet and cold, intestinal invagination, appendicitis secondary to some disease of the abdominal organs. It follows at times the eruptive diseases, or the cause can be due to an empyema. When found in fetal

¹ Read before the Washington Obstetrical and Gynecological Society.

life it is due to syphilis, or, taking place in the first few days of life, it can be attributed to the absorption of septic matters from the umbilicus. In the fibrino-purulent peritonitis pathogenic micro-organisms must in some way find admission to the peritoneum, either through direct extension from the different organs or the lymphatics can be the means of communication. This was the only cause that I could, after the necropsy, give as the chief factor in both of my cases.

It is often difficult to make an accurate diagnosis of acute peritonitis, unless the symptoms are well marked, as it is frequently masked when it occurs with other diseases. In the severe forms it is readily recognized. The pulse, fever, and general symptoms must be relied upon in forming an opinion. Yet it must be remembered that the purulent cases can exist with normal or subnormal temperatures. It is not possible to distinguish the different kinds of acute peritonitis in every case before death, unless an operation is performed. When the disease is severe and of short duration it can, as a rule, be classed with the purulent variety. In the tubercular form we have generally some evidence of the disease in other organs. Though the prognosis in all cases of this disease is grave, yet, as many bad cases recover, we are encouraged to use every known agent to bring it to a favorable termination. The disease can end in thirty-six hours and rarely lasts longer than a week.

The treatment must be conducted along general lines, such as the relief of pain and reduction of temperature. External applications are often of great value and comfort. The treatment so often depends upon the cause that when this is unknown we are at a loss whether to advise such a radical measure as an exploratory operation. In certain forms of acute and chronic peritonitis operative interference has been followed by such brilliant results that one is inclined to recommend such measures in nearly every case of inflammation of the peritoneum. The fact that many undoubted cases of acute peritonitis end in complete recovery militates against such general advice. Soon after the death of my second case, a girl aged 10 years entered my service with symptoms of obstruction of the bowels and peritonitis. Upon consultation an operation was deferred. The child improved and was discharged in several weeks, cured.

CASE I.—J. P., age 2 months, female, white, entered the Children's Hospital January 23, 1897, with the following

history: She was perfectly healthy, save a slight tendency to constipation, until two days ago. At this time obstinate constipation began, and yesterday she commenced to vomit. The child was in a moribund condition when admitted. The eyes were half-closed and sunken, the features pinched, and the skin dark gray and cold. The body was emaciated and the abdomen enormously distended and tender to the slightest touch. There was vomiting of a greenish-brown liquid with mucus. There had been no stool for some days. There was great tympany over the entire abdomen. Pulse could scarcely be felt; respiration rapid and shallow, with a contraction of base of chest in inspiration. A forced enema of soapsuds and sweet oil was given, but this was soon returned with some scybala about the size of a spool of cotton and of a light yellow color. The infant being almost pulseless, one two-hundredth grain of nitroglycerin was given with good effect. A careful examination was made by the rectum, with negative results. Another enema was given, but without success. The patient passed quietly away in the evening.

The necropsy was made by Drs. J. Ford Thompson and Bailey Ashford. The child was fairly well nourished, but evidences of the severe pain and collapse were to be seen in the sunken eyes and cast of features. The abdomen was distended, and on being opened a violent peritonitis was made manifest. The adhesions between the intestines and between them and the abdominal wall were very recent, and the fibrinous exudate readily broke down under gentle manipulation. Spots of hemorrhages were noticed on the parietal peritoneum. A most profuse puriform liquid of a greenish cast was noted. No odor to the pus or blood. Lungs, heart, kidneys, and intestines normal; a careful examination was made of the latter organs. Microscopical examination showed abundance of chain micrococci.

CASE II.—E. A., white, female, age 3 years, was admitted to the Children's Hospital March 5, 1897. Family history: Mother living and healthy; father died from traumatism two years ago. Previous history: Child has had pertussis; two years ago had a bad attack of malarial fever lasting two months; has had a number of mild attacks since then. Last November was treated in this hospital for fracture of the tibia. Was in perfect health up to February 25, when she partook heartily of chipped beef. During that night she groaned and cried out with pain in the abdomen, which was referred to the

umbilicus. There was high fever. The following evening she vomited, part of the vomited matter being composed of particles of undigested chipped beef. This was followed by a convulsion of short duration. The bowels have been constipated. The abdomen has been tympanitic and sensitive since illness began. There have been frequent eructations of gas. She has had anorexia, and only small amounts of milk and broth were given her. There has been a dry, hacking cough, with moderate fever and rolling of the head from side to side.

Present Condition.—She is well nourished, but face and skin are pale and sallow; sunken eyeballs, half-closed lids; naso-labial lines are prominent. There is dorsal decubitus, with the arms extended nearly at right angles to body and forearms partially flexed. There is at times gritting of the teeth. Shortly after admission she became unconscious and remained so during life. Respirations are labored, 64 per minute, and there is retraction of the lower ribs on inspiration. Dulness over left side anteriorly, and some râles with harsh respiration. Broncho-vesicular respiration in upper part of the same lung posteriorly. Pulse small and hard, ranging from 160 to 180 per minute. Temperature 104.8°. Takes nourishment eagerly. Large stimulating enema was given, which brought away some small yellowish fecal particles. Calomel, one-sixth grain every half-hour, was ordered until two grains were taken, but there was no result. Cotton-batting jacket was put on the chest and unguentum belladonnæ applied to the abdomen. The girl was given stimulants and medicines to ease pain and reduce the fever.

March 6: No improvement. Temperature remains above 104°. Very rapid, feeble pulse, 170 to 180 per minute. Abdomen is much swollen and tender. Many râles both sides of chest, more marked on left side anteriorly, with fine râles in lower part of both lungs. The child gradually grew weaker and passed away in the evening.

Necropsy, made by Dr. Walter Reed: Child well nourished. Abdomen much distended. Upon opening the abdomen there is found a soft, grayish exudate covering the intestines, omentum, parietal peritoneum, stomach, and surface of liver. A quantity of creamy pus wells up from the pelvic cavity on compression. Between the coils of the intestines there are collections of fibrinous exudate. Large amount of pus is free in the abdominal cavity, and the pelvis is filled with pus. No indication of anything fecal is found. Appendix is curled upon itself

behind the cecum; it is not injected, but upon its tip there is a deposit of fibrinous exudate. Cecum contains a moderate amount of soft fecal matter. The large bowel is distended by gas. The mesenteric glands are slightly swollen. The omentum is injected. The intestines are rather pale, and nothing abnormal was found on opening them and the stomach. The spleen is somewhat enlarged and flabby; is covered by an exudate; on section is of a slaty color; malpighian bodies small, discrete, and not injected. The liver is somewhat resistant on section; right lobe covered with heavy fibrinous exudate, which tears away easily, leaving visceral layer of peritoneum underneath it, injected and dull. Right kidney: Capsule comes away easily; organ is pale; cut surface shows pale whitish cortical substance, striation not well marked; surface moist and watery. Left kidney also has a moist appearance, and also that of cloudy swelling in the cortical substance, which appears to be edematous and wells up from the surface. Exudate on parietal and visceral layers of both pleuræ. About one and one-half ounces of fibrino-purulent fluid over lower portion of left lung. In right pleural sac there is a smaller amount of similar fluid. Over bases of both lungs and posterior surface of right lung same exudate. Left lung: Posterior two-thirds of lower lobe solid to the feel; cut surface dark; appearance of hypostatic congestion; other parts of lobe contain air. Cut surface of upper lobe presents numerous areas which slightly project above the surface, light reddish in color; upon pressure considerable clear fluid with air escapes. Right lung: There is less hypostatic congestion at its base. Middle lobe contains some atelectatic areas. Hypostatic congestion at apex of right lung; section is uniformly congested, and on pressure a small amount of bloody fluid escapes. Rather tenacious plugs are forced from some of the bronchial tubes. Larger bronchial tubes are injected; considerable reddish muco-purulent fluid contained in them on both sides. The heart is normal. Anatomical diagnosis: General septic peritonitis; double pleuritis, hypostatic and broncho-pneumonic.

The symptoms in the first case pointed clearly to peritonitis of a severe form. The mother could not give any information as to the probable cause of the attack except the tendency to constipation. As the infant was in a moribund state when it entered the hospital, any radical treatment was out of the question.

In the second case the disease was apparently caused by an

acute indigestion. The necropsy did not reveal the way in which the infection of the peritoneum took place. The pulmonary trouble was secondary to the peritonitis, as the lungs were reported to be in a good condition previous to the attack. The only way in which the extension took place was through the lymphatic system. In this case no treatment would have been of any value, especially an exploratory operation, as the septic infection had spread to the lungs and pleuræ when the child was admitted to the hospital.

913 SIXTEENTH STREET.

MODIFIED MILK.¹

BY

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THE breast milk of a healthy woman with a normal lactation is the ideal food for the infant during the first ten or twelve months of its existence; it is a perfect food, for it not only supplies all the elements (fat, sugar, proteids, salts, and water) necessary for the maintenance of life, the rapid growth and development during this period, but these elements are supplied under the proper conditions and in the required proportions for digestion and assimilation. Mother's milk being a perfect food, we should adopt it as our model or standard in the preparation of a substitute food, adding nothing more or less than is found in this diet provided by Nature, upon whose method it is impossible to improve.

In preparing our substitute food cow's milk is used as a basis, for it is cheap and accessible to all and contains all the constituents of human milk; it is, in fact, a complete food in itself, needing only the rearrangement of its elements, their modification to the proper proportions, and the correction of certain conditions to make it an almost ideal food.

I will formulate the following conditions and requirements necessary for a perfect food, based on the physiology of the human mammary gland and the chemistry of its secretion, and see what modifications are needed to make cow's milk conform to them.

¹ Read before the Milwaukee Medical Society, May 10, 1898.

First. The milk must be alkaline and about body temperature, for this is the condition in which it is received by the infant from the mamma. Cow's milk may be either alkaline, neutral, or acid, depending upon the food of the cow and the freshness of the milk; it is generally acid when delivered at the home, being from twelve to twenty-four hours old and frequently older. It can best be rendered alkaline by the addition of soda or lime water, the amount used depending upon the percentage of alkalinity desired. The soda should be used in healthy cases, and the lime water when the stools are too frequent. The desired temperature can be obtained by heating each feeding in a water bath just before using.

Second. The quantity must be sufficient and not more than sufficient. In the nursing infant the supply is regulated by the demand, the intervals of nursing, and the amount of fluid ingested by the mother. In preparing a substitute food the amount of each feeding should be based upon the average gastric capacity of normal infants of that age, the body weight and digestion of the individual infant. Thus an infant whose body weight will exceed the average will need a larger amount, and one who falls below, less; and in one whose digestion is feeble from premature birth, sickness, or previous bad feeding it will be found necessary to reduce the quantity.

The following table of the gastric capacity of infants at different ages I have taken from Holt, and find it about agrees with those furnished by other authorities: At birth, 1 ounce; 2 weeks, 2 ounces; 3 months, $4\frac{1}{2}$ ounces; 6 months, 6 ounces; 12 months, 9 ounces; 18 months, 12 ounces.

Third. The constituents must all be present and in their proper proportions. All the elements of mother's milk are present in cow's milk, but the proportions are very different, as the following analyses will show:

	Fats.	Sugar.	Proteids.	Salts.	Water.
Mother's milk.....	4.00	7.00	1.50	.20	87.30
Cow's milk.....	3.50	4.30	4.00	.70	87.50

Thus, cow's milk contains an excess of proteids and salts and too little sugar and fat. The chemistry and physiology of these elements are probably not the same as those found in human milk, especially the fats and proteids. Clinically this difference has been recognized for a long time, and many methods have been devised to overcome this difficulty, such as diluting with plain water, oatmeal, barley, or arrowroot water, but the simple and efficient one of reducing the proportions of

the elements sufficiently to suit the needs of each individual infant's digestion and assimilation seems to have been overlooked until of late years, and evidently this has been the stumbling block in the modification of cow's milk by most physicians.

Landvois' "Physiology" (fourth edition, 1892) states: "Cow's milk is one-third richer in proteids, but one-seventh to one-fifth poorer in sugar. By adding one-third volume of water and sugar, cow's milk can be made to resemble human milk. Human milk contains a very small amount of inorganic salts, its milk globules are smaller, and there are qualitative changes in its coagulated casein as compared with cow's milk. Cow's milk yields a dense curd, while the curd of human milk falls in a more flocculent condition. Moreover, human milk is more easily digested, both by the normal and artificial gastric juice, than cow's milk. . . . The casein of cow's milk differs qualitatively from that of human milk, its coagulated flocculi or curds are much coarser than the fine curd of human milk, and they are only three-quarters dissolved by the digestive juices, while human milk is completely dissolved."

If three-quarters of the casein of cow's milk only can be digested by the adult, much less can be digested by the infant, and clinically we find such to be the fact. While the infant can digest human milk containing 1.50 or more per cent of proteids with ease at birth, 0.75 per cent, or even less, will be found to be the proper proportion of cow's milk, and if more be given, sooner or later indigestion will be the result.

The elements of cow's milk can be modified to obtain almost any percentage desired, as follows: The proteids can be reduced by diluting with water as many times as necessary. The fat can be reduced by diluting plain milk with water, or increased by adding cream of a known percentage of fat. The sugar can be increased by the addition of milk sugar to obtain any percentage desired. The salts are usually reduced sufficiently by the dilution of the proteids. By this method the elements of the milk can be modified, not only to resemble human milk, but, what is of much more importance, *to suit the digestive functions of the individual child.*

Fourth. The food must be digestible. This is accomplished by modifying the milk to suit the digestive functions of the child.

Fifth. The food must be fresh, clean, and sterile. Cow's milk being the basis of our food, the fulfilment of these conditions will depend upon our milk and cream supply. At present

the milk we use will not answer any of these requirements, for it is never less than twelve to twenty-four hours old; and as for its cleanliness, I will simply quote a paragraph from the report of the Commissioner of Health of Milwaukee for 1897: "Those who are unfamiliar with the conditions found among dairymen who are not scrupulously clean in their methods would be astonished and disgusted at the material which is found in milk that has been examined in our laboratory. It includes particles of manure, bits of cow's food, numerous hairs, mould and fungous growths, bits of insects, threads, human hair, moss, and other disgusting substances."

This state of affairs could be overcome by having a milk laboratory established in our city. Such institutions are now flourishing in many cities—Boston, New York, Brooklyn, Baltimore, and Chicago. Or, if this is not practicable, we at least could have "certified milk," as practised in many other places. Not having these up-to-date advantages, we have to pin our faith to pasteurization and sterilization—both of them good in their way, but neither can make the milk fresh or clean, and without these qualities it is certainly not fit for an infant diet.

Sixth. It must not be adulterated by the addition of any substance not found in our standard human milk. Thus, starch and starchy waters are not only unnecessary, but are an element of real danger, for the digestive fluids are not sufficiently developed at this early period for such articles. The reason why cow's milk has failed in the past to give satisfaction as a substitute food is that these facts have been overlooked or not properly understood, or, in other words, it has not been properly modified. The reason why patent and proprietary foods give no better success is that their constituents are not in the proper proportions, and they usually contain principles not found in mother's milk.

It is not my intention to run down any or all patent foods, for I believe they have frequently been the means of tiding an infant along during the early months of life when badly modified cow's milk had failed. They are no worse and no better than cow's milk modified empirically, improperly, and without any regard to the chemistry of the milk or the digestion of the child. Unfortunately in the past too little was known about this subject and too little attention given it. Often the choice of food was left to the mother, and the grandmother or friends constituted judge and jury to say if it was suitable or what was next to be tried.

To-day, thanks to the labors of such men as Rotch and Holt, so much light has been thrown upon the subject of infant feeding that there is no longer any excuse for leaving this important division of pediatrics in the hands of mothers, nurses, or patent-food people. The problem of substitute feeding is not an easy one, but with care, a fresh, clean milk supply, and a close study of the needs of each case, it can be much simplified and good results obtained in a vast majority of all cases. Holt states that he can raise 90 per cent of healthy babies on modified milk. If we compare our present annual death rate of infants under 1 year of $33\frac{1}{2}$ per cent, it shows that our present methods are very poor or our milk very bad—probably a combination of both.

From my own clinical experience I usually find one of the following causes present, and sometimes all of them, when artificial feeding is unsuccessful: The intervals of feeding are irregular and generally too frequent; the bottle is given the baby whenever it cries. The amount of the food is too great for the gastric capacity or the enfeebled digestion of the infant; frequently I have found six or eight ounces given a child of 3 or 4 months, whose stomach would normally hold only four or five ounces and whose digestion was poor. The percentages of the elements are too high; the food is too rich: usually the fats and proteids are in fault, except in condensed milk and patent foods where the sugar is in excess. The nipples, bottles, and milk-containers are not kept clean. The milk is contaminated, adulterated, and not fresh.

While modified milk is not an ideal or perfect food and will never fill the place of mother's milk, it is vastly superior to all the other foods now in such general use, and as it becomes better understood and more generally used it will be the means of reducing the high death rate of infancy in our large cities. Furthermore, I believe the time will come when the milk diet for the adult patient will be prepared by the same reasonable and rational methods, based on the chemistry of milk and the physiology of digestion, as are now used in its preparation for the child.

197 FARWELL AVENUE.

CORRESPONDENCE.

"DECI-NORMAL" SALT SOLUTION.

TO THE EDITOR OF THE AMERICAN JOURNAL OF OBSTETRICS, ETC.

DEAR SIR :—When the sodium chloride solution came into use a few years ago, taking the expression "normal salt solution" at its technical value, I employed a solution containing 58.4 grammes to the litre. I soon discovered that the men who spoke of the solution as "normal" were really employing a deci-normal solution—a solution containing 5.84 grammes (approximately 6 grammes) of NaCl to the litre. Other men have undoubtedly been misled just as I. Would it not make for exactitude to speak and write of the solution as being deci-normal? As a warm admirer of your JOURNAL I would be pleased to see the solution spoken of correctly in your columns.

Very truly yours,

JOHN J. GAYNOR.

EUREKA, CALIFORNIA,
June 25, 1898.

TRANSACTIONS OF THE SECTION ON GYNECOLOGY OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Special Meeting, April 29, 1898.

EDWARD P. DAVIS, M.D., *in the Chair.*

By invitation, DR. HARVEY R. GAYLORD, of Buffalo, read a paper entitled

MALIGNANT GROWTHS OF THE CHORIONIC EPITHELIUM, AND
THEIR RELATION TO THE NORMAL HISTOLOGY OF THE
PLACENTA.¹

DR. THOMAS S. CULLEN, of Baltimore.—I wish to congratulate Dr. Gaylord on his able presentation of the subject, and think all of us have been particularly fortunate in hearing it. For several years I have been interested in the early develop-

¹ See original article, p. 145.

ment of the placenta and decidua, and from the observations made have no hesitancy in saying that the decidual cells are formed from the normal stroma cells of the mucosa and from a proliferation of the endothelium of the blood vessels. In the uterine mucosa in the non pregnant state a moderate number of small round cells are found, and these, as might be supposed, are also found in the decidua. They correspond to the ordinary small round cells and do not become transformed into decidual cells. The epithelium covering the surface of the mucosa becomes flattened, at times being spindle-shaped; the glands in the superficial portion are recognized as mere slits or cannot be detected, but on passing toward the muscle they gradually widen out, and in the spongy layer show marked gland hypertrophy so characteristic of early pregnancy.

Dr. Gaylord has mentioned the finding of giant cells in the muscle a short distance beneath the decidua. From a study of the muscle at this point we gain a clue as to the method of the decidua formation—namely, the swelling and proliferation of the pre-existing elements. From a careful study of such cases I am convinced that these giant cells are due to a proliferation of the stroma cells between the muscle bundles, but some are certainly formed from muscle fibres, as I have been able to trace all stages from normal muscle fibres to muscle cells containing from two to six nuclei.

The source of the syncytium has been a mooted question, but the balance of evidence is certainly on the side of its embryonic origin. Were the syncytium referable to the uterine epithelium, we would certainly expect to find the mucosa, under pathological conditions, occasionally reverting to this form; but such is not the case, and never do we find any semblance of syncytium apart from pregnancy. I do not think there is the slightest ground for referring it to maternal in origin.

The cells of Langhans' layer resemble very closely the cells forming the stroma of the villi, and we know that it is only in the early months that this layer is demonstrable. I am inclined to the belief that the cells forming this layer are in reality stroma cells which have of necessity assumed a marginal arrangement for the time being.

Dr. Gaylord has not referred to a most instructive case recently reported by Schmorr, where a patient, eighteen weeks after normal delivery, developed a syncytial growth in the vagina. The patient died six months after delivery with numerous metastases, but examination of the uterine cavity failed to reveal anything abnormal. Schmorr thinks that the growth commenced in the placenta and that metastases rapidly developed in the various organs; but the growth had as yet not extended by continuity to the uterine wall, hence when the placenta was expelled the entire original focus was removed. This case should stimulate us to systematically examine the placenta to see that no pathological process be present.

Neumann, at a meeting of the German Gynecological Society in 1897, presented a very instructive report on 8 cases of hyda-

tidiform mole which he obtained from Schauta's collection. A review of the clinical histories showed that 5 of these patients remained well, but 3 developed syncytial tumors. On examination of the five moles where the patient remained well, the usual histological appearance of hydatidiform moles was found, but in the 3 cases where the malignant growth followed the results were much different: not only was there proliferation of the syncytium covering the villi, but it had penetrated the stroma of the villi in all directions, giving a picture identical with syncytial tumors. The report of even this small number of cases appears so suggestive that it will be imperative for us to examine histologically every mole expelled, to see if there be any evidence of a syncytial tumor. If there be a suspicion that such a growth is present the uterus can be curetted and scrapings examined; and should the examination prove positive an immediate removal of the uterus is indicated.

A word may be said as to the method of removal of the uterus in these cases. Where a pregnancy does not exist we know that the vagina is frequently rather small and it is difficult to remove the uterus by this route, but during or shortly after pregnancy the uterus can be delivered with great ease per vaginam. Occasionally, where for carcinoma a vaginal hysterectomy is performed, lateral slits are made in the vaginal wall to insure the necessary space; but, as we know, there is great danger of particles of the growth becoming implanted in these incisions and going on to further development. When such a danger exists where carcinoma of the cervix or body is present, how much greater care must we exercise when handling such a rapidly growing tumor!

DR. H. L. WILLIAMS.—My experience has been limited to a microscopic study of four cases. I think that probably in many of the cases of chorio-epithelioma the recognition will occur too late to be of practical value in saving the patient's life. The mortality so far has been very high indeed. The metastases may occur at a very early period. In the case which Dr. Williams, of Baltimore, reported, metastasis was the first symptom, a small growth the size of a walnut appearing in the vulva, ulcerated, and the patient later died from metastasis to various organs of body. Among clinical symptoms the most prominent is recurrent bleeding of a *gushing* character. This seems to be one of the earliest and most constant symptoms, the gushing character being due to the breaking-down of the vessels by the malignant growth. In the most recent case reported by Dr. Gebhard this symptom was particularly characteristic. In the early months of the patient's illness recurrent hemorrhages took place. These were treated as ordinary hemorrhage of the uterus and the hemorrhages ceased for a number of months. Five months after that time recurrent hemorrhage began again with constantly increasing severity, and the case was sent to the hospital, curettement performed, and tissue examined, but a positive diagnosis could not be made. Large quantities of fibrin and blood clots were removed of a peculiar reddish color,

but no epithelial elements were present to establish the diagnosis. The growth rapidly returned, then metastasis occurred, and the woman began to have nervous symptoms, paralysis of one side of body, optic symptoms, and finally died. The post-mortem showed that metastasis had taken place in the brain and other organs of the body. The interesting point here was that in the primary uterine growth the characteristic microscopic appearance was not found.

In these cases the prominent clinical symptoms are that the external os is more frequently open; the cavity of uterus filled by a soft, placenta-like tumor, which is readily removed by the finger and returns shortly after removal; and that intermittent hemorrhages of a gushing character are almost invariably present. I think all cases in which hemorrhage takes place, not only after labor but also during the latter months of gestation, should be investigated. As the growth may already be present in the placenta before term, examination by microscope will positively reveal its malignant character. It is not at all improbable that many of these cases have occurred in America. We have now more than 50 cases since Chiari made the first report of malignant growths occurring after labor, and there is no reason to suppose that the disease has not been in existence for centuries. I do not believe the gynecologist will see as many of these cases as the obstetrician; and since the opportunity for investigating and examining all cases of doubtful character is so much superior in the clinics of Europe, it is only natural that many such cases should have been recorded there while only two have been reported in this country. I think that during the next ten years, and in fact from this time on, such cases will be more frequently found in America. It would perhaps be interesting in this connection to mention a case I had the opportunity of seeing in the clinic of Prof. Landau, in which a benign metastasis of hydatidiform mole occurred in the vagina. The hydatidiform mole was removed and some time after the metastatic growth made its appearance just inside the vulva. This secondary growth remained localized for a time and was then removed. Four years later the woman was in perfect health. I have sections of the specimen.

DR. B. C. HIRST.—I have had two cases which I think were syncytial cancers. One, I know, was malignant. Its history illustrates the careless methods of examination too prevalent in this country. I examined the woman in the Philadelphia Hospital and found the symptoms of puerperal sepsis. She had been delivered within two weeks. My attention was called to her a short time before the clinic hour, and I ordered her brought before the clinic to demonstrate the technique of curettement for puerperal sepsis. Prior to inserting my curette I made a digital exploration. I was horrified to find my finger penetrating a soft mass to such a depth that I feared I had perforated the uterine wall. I withdrew my finger, inserted the curette, and cautiously scraped out material which I felt sure belonged to some malignant growth. I sent speci-

mens to Prof. Guiteras for microscopical examination. He returned a report that the growth was a sarcoma. I urged on the woman the necessity for a hysterectomy, and assured her positively that she would die if she declined the operation. She positively refused and remained deaf to all arguments, belonging to that difficult class to deal with, the ignorant paupers in the Philadelphia Hospital. Meanwhile the woman apparently improved greatly. She discharged from the uterus large quantities of foul detritus and then appeared to get well, by crisis, of her septic symptoms. Her temperature sank to normal, her color returned, she regained her strength and appeared to be in perfect health. She left the hospital in high spirits and cast a fling behind her, as she went, at my inordinate zeal for operation. Within three months she was back in the ward again, and within a week of her return she died. The postmortem examination, made, I dare say, carelessly enough, simply showed, according to the report, that the woman had died of "cancer of the womb." The specimen was thrown away and the patient was buried. I happened to be out of town at the time and was not notified of the woman's return to the hospital nor of her death. I believe that this was one of the very few cases reported in America of syncytial cancer.

I have had one other case which I believe was of the same kind. An Italian woman was delivered in the University Maternity and after delivery developed septic symptoms. I made an intrauterine exploration and found a large, soft, papillomatous sort of growth at the placental site, with deep clefts running through it. The finger tip sank so deeply in these clefts that I hesitated to press more firmly for fear of going into the peritoneal cavity. There was besides in this woman a high temperature, a stinking discharge, and every sign of profound septic intoxication. She, too, recovered from her septic symptoms by crisis. I had arranged to remove a portion of the growth for microscopic study, but before the appointed time the woman's husband insisted upon removing his wife from the hospital, calling for her one day in a carriage and taking her away with him. I have been unable to trace her since.

Finally, I have had a third, a case of some interest in this connection. It was a prolonged retention of a few hydatidiform vesicles in the uterus, giving rise to profuse and alarming uterine hemorrhage. After a curettement and the removal of the vesicles, the presence of which I had not suspected, the woman showed no further tendency to bleed and left the hospital well. Her subsequent history, however, might possibly have shown that she too had a syncytial cancer, which is not an uncommon consequence of a retained hydatidiform mole.

I wish to ask particularly whether such early symptoms as occurred in my first two cases are common in syncytial cancers. In both these women the symptoms developed in the early puerperium, certainly within ten days or two weeks of delivery. In both cases the growth must have made considerable progress during pregnancy. The contraction of the womb following

childbirth cut off the blood supply to the tumor, which then putrefied. Serious septic intoxication followed as a matter of course. I do not remember having seen this sequence of symptoms described anywhere, and I should like very much to be instructed upon it.

DR. E. P. DAVIS.—I feel we are all so much in the position of learners and not discussers that we have not much to say. What we have heard to-night reminds us of ectopic gestation and that the fetus is a parasite, to be removed as such. In syncytial growth we have parasitism in its most malignant form. This brings up the question, what measures shall be taken by the obstetrician in making the womb absolutely clean and empty? I believe we must revise our obstetrical teaching. It has been supposed that if the placenta came away apparently entirely, we could overlook the persistence of bloody lochia; if the "red lochia" returned the woman must simply lie down and be more quiet. But in view of what this subject teaches us it seems, first, that the obstetrician must manually in all suspected cases explore the womb immediately after labor; and, second, in the puerperal state, if hemorrhage occurs, the womb should be promptly curetted.

I have at present a case which I shall watch with interest and apprehension. It is the wife of a physician, who in the month of October had an abortion; she expelled a decidual cast. Only two weeks ago she expelled again what was apparently a decidual cast. This was curetted away by my assistant in my absence, and microscopic examination revealed a degenerated hydatid mole. This patient will require observation and undoubtedly a second curetting in a short time.

I would like to ask what, if any, lesions in the new-born child may result from such a growth as this or such a tendency. I am reminded forcibly of the desirability of knowledge upon this point from the recent case of a woman in her third confinement, who had brittle membranes which separated at the time of labor. The placenta itself, while not examined microscopically, was an ill-nourished placenta. The woman has hemoglobinemia. In that case, within a few hours of birth, the child had swelling of the conjunctivæ, and an ophthalmologist diagnosed non-septic inflammation of the conjunctiva. Evidence of syphilis was absent. In the decidua and in the chorion, and in the child itself, there is evidence of a pathological change which I cannot find described accurately in literature, and which was certainly entirely new to the ophthalmologist in consultation with me.

DR. CULLEN.—The tumor may be detected within four weeks after delivery, but in some cases several months elapse before the exact nature of the growth has been detected. If such a condition be suspected, examination of scrapings from the uterine cavity will give a positive diagnosis. The picture differs absolutely from ordinary sarcoma and carcinoma, as in the latter tumors syncytial elements are never found.

DR. GAYLORD.—The case which Dr. Cullen speaks of I

have seen, and it is certainly a very interesting case, and Schmorl was for a long time quite puzzled about it. The case was dug out of Leopold's collection. It has been in Leopold's collection some ten or fifteen years.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of December 3, 1897.

The President, T. C. SMITH, M.D., in the Chair.

DR. J. WESLEY BOVÉE presented specimens of

OVARIAN HEMORRHAGE,

with the case history, as follows:

Mrs. L., white, 31 years old and married thirteen years, was admitted to Columbia Hospital November 15, 1897, complaining of pain in the lower part of the abdomen that had continued nearly all the time during the past nine or ten years. She had had a child, April, 1896, after a normal labor, and no abortions. Menses began at 14; have been recently very profuse, regular, and often lasted two weeks; usually is free from menstrual pain, and last period occurred November 7. There was found an old tear of the perineum and of the cervix uteri, and the uterus retroflexed and adherent; the appendages seemed to be adherent. November 29, by abdominal section, the appendages were removed and ventrofixation of the uterus done successfully. Both tubes were badly adherent and contained pus; the right ovary was sclerocystic and contained a number of hemorrhagic cysts and infarcts, and the left one a blood cyst two inches in diameter that occupied nearly the whole organ; on the free end of the organ was a cyst, an inch in diameter, that was thought to be peritoneal, as its fluid was clear and transparent. He spoke of the frequency and danger of these hemorrhages from the ovary and from the Fallopian tube as well, and of the probable pathological conditions that accompany and antedate them. He said further that these hemorrhages often greatly resemble tubal pregnancy in the severity of the hemorrhage, the similarity of symptoms, the irregularity of the menstruation, often uterine hemorrhage, the great collapse, and the recovery with or without operation, or death with or without this procedure. The free abdominal hemorrhage is the same as in ruptured ectopic pregnancy. He quoted different observers who had reported having mistaken these cysts for ectopic-pregnancy sacs.

DR. J. THOMAS KELLEY, JR., said he had operated on a case of blood cyst of the ovaries about five years ago. He had not at that time been able to find a very extended literature on the subject except that of extrauterine pregnancy. The cysts in his case were very much larger than those in Dr. Bovée's, but he had not been able to get them out whole owing to the exceedingly friable condition of the tissue. The ovarian substance was all removed, but the woman had continued to menstruate regularly. He asked if a hemorrhagic diathesis might not have something to do with these cases.

DR. BOVÉE said there was plenty of literature on this subject. The uterus is infected, and that is what keeps up the bleeding. He curetted before removing the tubes and ovaries, and if the uterus is much diseased he removed it also. Even Dr. H. A. Kelly, who wishes to be thought conservative, removes the uterus in the badly infected cases.

The paper of the evening was read by DR. C. N. ACKER.

ACUTE FIBRINO-PURULENT PERITONITIS IN INFANTS.¹

DR. G. B. HARRISON said he congratulated Dr. Acker for having brought up this subject, of which so little is written. He thinks pediatrics is very much behind in not giving more attention to these and kindred subjects. Dr. Holt has found but 46 cases of peritonitis in infants among all the New York hospitals, and in 726 consecutive autopsies in the New York Infant Asylum only 4 cases were acute peritonitis. The speaker had never seen peritonitis in infants, but he had seen it in childhood.

DR. S. S. ADAMS said that the subject was a fruitful one, for investigative necropsies should be made in doubtful cases to determine the cause. His experience accords with others. The most important point is to determine the cause of infection. It is easy to determine in some cases, but exceedingly difficult in others, like the ones reported by the essayist, in whose cases there appeared to be no cause for the pus. Secondary to empyema or pleurisy the diagnosis is easy, but in the fulminating it is exceedingly difficult. In Dr. Acker's cases the contents of the alimentary canal should have been examined for bacteria. He saw a case of sero-fibrinous peritonitis operated on last Sunday by Dr. J. Ford Thompson—a child, 72 hours old, with imperforate anus. On opening the abdomen a large quantity of serum escaped which looked very much like ascites. The child lived four hours. The prognosis is bad; in the fulminating form it would depend on the variety of bacteria present. He doubted if this class would ever become chronic, forming abscesses that would require operation. Dr. Adams cited a case of a typhoid perforation in which the food in the stomach was well digested, but large quantities had escaped into the abdominal cavity. There had been no movement of the bowels since the attack of peritonitis. You cannot make a diagnosis by distension of the

¹ See original article, p. 248.

abdomen, nor does high temperature signify much. Dr. Adams cited the case of a child who was about to be operated on for peritonitis who was promptly relieved by a large injection of infusion of senna. The temperature may be reduced from 105° to 100° F. by large injections, given with the child held head downward. In this case it was undigested food that caused the temperature.

DR. J. WESLEY BOVÉE said something should be done which would tend toward a favorable termination. It is not much trouble to open the abdomen and wash it out well, and there is very little additional risk. Certainly the intestinal canal should be well cleaned out, and if necessary wash out both the stomach and bowels. Treatment with morphia is only to admit that we can do nothing. He never used it in adults, but cleaned out the intestinal canal.

DR. H. B. DEALE said that it was to be deplored that no bacteriological examination had been made in Dr. Acker's case. He agreed with Dr. Bovée that the abdomen should be washed out if the symptoms indicated it. Dr. Deale said he thought infants were frequently infected by soiled towels soon after birth. He asked Dr. Acker if the appendix had been examined for a possible perforation.

DR. ACKER closed the discussion by saying that in his first case there was rapid pulse, vomiting of fecal matter, but no rise of temperature, the patient being in collapse. In the other case the temperature was 104.8° F., which continued till death. It is almost impossible to make a diagnosis of the variety. The case of Dr. Thompson was due to congestion; a cathartic had been given and there was no outlet. There was no rupture of the appendix in his case.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY.

TWENTY-THIRD ANNUAL MEETING, HELD IN BOSTON, MAY 24, 25, AND 26,
1898.

The President, PAUL F. MUNDÉ, M.D., in the Chair.

First Day—May 24.¹

Discussion:

HAS ELECTRICITY CEASED TO BE A USEFUL THERAPEUTIC
AGENT IN GYNECOLOGY?

DR. HENRY J. GARRIGUES, of New York, opened this discussion. He said that static electricity had never played a great rôle in gynecology, although it had been found a good

¹ Continued from p. 116, July JOURNAL.

general nerve tonic and useful in relieving neuralgic pain. The faradic current, by the aid of improved apparatus, had become a useful adjunct in gynecology. The short wire coil gave a current which was useful in subinvolution, infantile uterus, amenorrhea, sterility, and uterine hemorrhage. For subinvolution he considered it the best remedy, and it was also useful in chronic metritis not originating in childbirth. Faradization was also valuable in cases of infantile uterus. By means of a bipolar electrode the faradic current could be used in securing uterine contraction and so controlling hemorrhage. The high-tension current obtained from the long, fine wire coil was of value in many cases because of its analgesic action. Of still greater importance is the galvanic current; through its aid he had saved many an ovary which would have been otherwise sacrificed. It is useful in cases where hot douches and iodine locally fail. Of course, if there is cystic degeneration, nothing but surgical treatment is of avail. Electrolysis might also be used in dilating the cervical canal. Its advantage over mechanical dilatation and over discission lies in its being painless, free from danger, and not requiring the patient to stay in bed. In negative intrauterine galvanization the physician has the best-known remedy for functional amenorrhea with which he was acquainted. In extrauterine pregnancy electricity is used much less frequently than it was some time ago, but in a patient personally dear to him, who had an extrauterine pregnancy advanced only a few weeks, he would prefer galvanism. Electricity may also be used, in the form of the galvano-cautery, for the treatment of cervical ectropium. A nearly dry gas-carbon electrode connected with the positive pole should be applied to the ectropium. By intrauterine negative galvanization with a zinc electrode he had frequently been enabled to check metrorrhagia that had resisted curettage done by his own hand. In many cases of uterine fibroid the symptoms are markedly relieved and the patient's general health greatly improved. He had seen tumors pushed out of the wall so as to form prominences in the peritoneal cavity. In only one case, however, had he seen a myoma disappear altogether. This patient was 42 years of age, with a myoma in the posterior wall of the uterus as large as a medium-sized orange. She suffered great pain and had fearful hemorrhages which could only be controlled by tamponade. She had thirty-eight applications of the galvanic current in nine months. All pain disappeared, menstruation became normal, and she was restored to health, so that the treatment was discontinued. When seen one year later there was not a trace of the tumor to be felt and she was in perfect health. One such case, he said, was enough to make him recommend a trial of electricity in these cases before resorting to surgical operations. The galvano-cautery was of great service in the palliative treatment of uterine carcinoma. It was the best method of treating carcinoma, because it destroys the germs of the disease for some distance beyond the area to which it is directly applied.

In conclusion, he said that electricity had not only not ceased to be a useful therapeutic agent in gynecology, but had, in some respects, enlarged its domain and demanded the closest study from every gynecologist.

DR. EGBERT H. GRANDIN, of New York, said that in taking the affirmative of this question it seemed fitting to glance back ten years. From 1884 to 1892 he had delved deeply into the mysteries of electricity. The outcome of his study and experiences was the publication of a monograph on the subject, the keynote of which was a protest against the ultra-enthusiasm which pervaded others in a similar field. He now only regrets what was said in that book about the treatment of ectopic gestation, and his change of opinion is based on an enlarged experience. He had now learned that a cure is within the reach of surgery, and that it is better than the merely palliative method offered by electricity. He had been taught badly, and he had emerged a little later than some of his colleagues because he had insisted upon testing the question for himself. Formerly he treated with electricity uterine flexions with stenosis and endometritis uncomplicated by tubal or ovarian disease. He became satisfied that with the negative pole and low ampérage he could overcome stenosis more quickly and better than by graduated dilators. His success had been fair as regards the abatement of discharges, but relapses had been frequent. He had, therefore, discarded electricity and had resorted to the surgical dilatation and curettage of the uterus. According to the old ideas, it seemed to him as rational to treat cellulitis by electricity as by painting the vaginal vault with iodine and introducing tampons *ad infinitum*; but with the disappearance of the cellullitic cobwebs from his eyes he had rejected electricity, iodine, and tampons. He would still claim that by means of one or the other in selected cases a symptomatic cure for a variable time was possible, but an anatomical cure never. The only way to obtain a cure is by surgery. He tested electrical treatment of fibroids in about fifty cases, and in none did he see the tumor disappear except when the menopause supervened. The discharges were controlled in about thirty per cent of the cases. To puncture he had never resorted. Fibroid tumors producing pain he soon learned by experience were unsuitable for any treatment except the knife, because the pain, he found, was due to disease of the appendages and not to the fibroid. Electricity would be dangerous in this class of cases. Uncomplicated uterine fibroids operated upon by him had so far uniformly recovered; he therefore preferred the certainty of surgery to the uncertainty and delay of electricity. The first case of ectopic gestation that he saw treated by electricity went into profound collapse, but eventually recovered, chiefly through good fortune. He treated from four to six cases personally by electricity, and all recovered, although the diagnosis was open to doubt as the abdomen was not opened. One patient treated by him lay in collapse for hours, and she had a consecutive hematocele which

suppurated and required incision. About eighteen months later he saw the same woman in collapse with symptoms of extrauterine pregnancy, and on opening the abdomen he had found that the tube that he had treated for ectopic gestation was the seat of another such gestation. The woman recovered from this operation, and so did he from the effects of erroneous belief. Since then he had operated upon fourteen cases of ectopic gestation, including two cases in collapse from free peritoneal hemorrhage. One died shortly after operation, from fatty heart; the others all recovered. In none of the cases operated upon by him would electricity have availed anything, except perhaps to hasten the fatal termination. He wished it to be remembered that he did not condemn electricity until after he had given it a fair and ample trial.

DR. GEORGE J. ENGELMANN, of Boston, said that it would appear from the medical periodical literature that electricity had indeed ceased to be a useful therapeutic agent in gynecology. Electricity had remained the same, but conditions had changed. We were now able to perform quickly and safely what was done formerly in a longer time. He would emphatically answer the question propounded by saying that it had not altogether ceased to be a useful therapeutic agent; it was yet a potent remedy in suitable cases. He believed the electrocautery to be much more satisfactory than the thermocautery, but the apparatus is not so convenient. It was pretty well agreed that static electricity is a good systemic tonic. From the sinusoidal current he had seen only sedative effects, and these had been less than from the faradic current. In the treatment of uterine fibroids electricity is without danger, does not confine to bed, and very often gives speedy relief. It must be understood that electricity is used in these cases, not to cure the disease, but to relieve certain symptoms, chiefly those dependent upon congestion. It should be remembered that the brilliant immediate results of surgical operations do not necessarily mean a permanent cure, nor should it be forgotten that even the immediate results are not altogether what they seem to be from the published statistics. He had seen patients with fibroids improved decidedly in their general health and made comfortable, and occasionally he had noted a diminution of the tumor as a result of electrical treatment. Unless a decided indication exists for the use of the knife, such as the patient being a workingwoman or the tumor excessively large, the possibility of relief from the electrical treatment should be borne in mind. When it is a question of a mortality of one in ten or one in twenty, when no urgent symptoms are present, most of us, he thought, would rather use electricity, which is not dangerous even when used in the form of aseptic puncture. Electricity is being used less because the time, skill, and necessary facilities are wanting in hospitals. In conclusion, he would say that electrical treatment is effective and perhaps the most valuable single remedy. The field, however, must be limited for the reasons already given.

DR. BOLDT said that the last speaker said that electricity was falling into disuse. This was true, but he would prefer to say that the uses for electricity are being more sharply defined in gynecological practice. He would say that while cervical stenosis can be relieved symptomatically by the galvanic current, the secondary effects would be found to be worse than the condition for which the treatment was originally instituted. In the first place dilatation is produced, but after a year or two stenosis follows. This he had been able to observe, because at one time he had used this electrical method quite extensively. The following case was instructive in connection with this discussion :

A woman 33 years of age had been treated by him previously for dysmenorrhea and hyperplastic endometritis. On April 4 of the present year she had again consulted him, stating that she had been well up to one week ago. At that time she had begun to discharge from the vagina a dark-colored and rather tenacious blood. She was positive that she had not gone beyond the regular menstrual period, and asserted that she had had no pain. Examination showed the uterus movable and neither tender nor enlarged. There was a tender spot to the right of the uterus, apparently due to a previous operation for lacerated cervix. In order to relieve the supposed endometritis he applied a galvanic current of fifty milampères for ten minutes, using the anode within the uterus and a large cathode over the hypogastrium. Four days later she returned for treatment, and while awaiting her turn in his office she suddenly went into profound collapse. The diagnosis was intraperitoneal hemorrhage, and as soon as possible he operated upon her, without waiting for reaction, as the hemorrhage was evidently very active. She recovered. The interesting feature of this case in connection with the present discussion was, that if electricity had been able to do what was claimed, this accident should not have occurred, because the embryo should have been killed by the current that was used at the first treatment.

Regarding fibroids, Dr. Boldt said that the only class benefited by electricity is the interstitial variety when it causes endometritis. That the current does produce harm in fibroids there could be no question, for most gynecologists had met with fibroids in which sloughing had been produced by galvanic treatment. He objected to the use of the galvano-cautery in vaginal operations on the same grounds as he objected to the thermocautery—*i.e.*, the great liability of injuring tissues not intended to be touched. There seems to be a marked secondary effect from the use of these forms of cautery. Mackenrodt had reported a number of instances in which the ureter had been injured by the thermocautery.

Dr. Boldt said that electricity was still useful for the relief of many cases of ovarian neuralgia and of certain forms of endometritis. In some cases of endometritis there is no thickened endometrium to be removed by the curette, yet the con-

dition gives rise to discomfort, and this discomfort is relieved by electrical applications.

DR. A. PALMER DUDLEY said that years ago, after Apostoli read his paper, he went to France and studied in Apostoli's clinic. On his return he had provided himself with an excellent outfit, and had employed the method as carefully and intelligently as possible for two years. At the end of this time he came to the conclusion that it was a very uncertain and, on the whole, unsatisfactory agent. He had consequently abandoned the method.

DR. A. LAPHORN SMITH said that he had been using electricity for ten years, and he did not like it because it was time-consuming and troublesome, and the results were not as brilliant as after surgical operations. Nevertheless he continued to use electricity. He had restored to health about forty women who had been suffering from uterine fibroids and who had remained in good health since the electrical treatment. In one case, after about thirty applications, strong uterine contractions set in and he delivered a large fibroid with the aid of forceps. In these cases of fibroids he had employed Apostoli's method, using a current having an average strength of 125 milampères. The average duration of the treatment was thirty-five or forty sittings. He had had about ten failures, one of them being a woman who had been electrically treated by a number of other physicians also. He had afterward operated upon her and had found that the diagnosis was wrong, there being no fibroid present. In several of his cured patients the attending physicians had reported to him that the tumors had disappeared. He had absolute proof of two cures, and the others were symptomatically cured.

DR. FLORIAN KRUG said that he could no longer sit quietly and listen to all the statements that had been made in favor of electricity. He wished to enter his protest against any such statements going out from this Society, for they were liable to do much damage to suffering women by reviving the electrical fairy story. He wished to indorse every word that had been uttered by Dr. Grandin after his conscientious investigation of this subject. The successes of electricity, the speaker said, he believed to be attributable to poor diagnoses and ill-observed cases. The only field in which it might be useful, he thought, was in those hystero-neurotic individuals who want something done for them. It would be just as well not to connect the wire with the source of electricity at all, so far as the therapeutic effect was concerned.

DR. R. STANSBURY SUTTON said that at one time he had personally asked Apostoli whether he had ever succeeded in causing a fibroid tumor to disappear, and had received a negative reply, and this, too, although five years had elapsed since Apostoli's first writings on this subject had been published. Dr. Sutton said that for five years he had given the electrical treatment the very best attention possible. At the end of this time he found that no case had been cured by it, although one

submucous fibroid had been expelled, and one patient who had passed the menopause had been benefited, the tumor still being present. Shortly after this he had entirely discarded the treatment. Cases had come to him with the assurance that they had been cured by electrical treatment, yet examination showed the tumor to be still present. He believed with Dr. Krug that the time had come to frown on the idea that electricity cures fibroid tumors. It would often control the hemorrhage as well as the curette, but he believed that any one who penetrates the abdominal wall with the needle and plunges it into a fibroid tumor runs the risk of perforating a blood vessel and exciting hemorrhage and peritonitis. He had had occasion to do a hurried laparotomy in a case in which such a puncture had been made.

DR. HERMANN J. BOLDT read a paper on

THE PORRO OPERATION VERSUS TOTAL HYSTERECTOMY.¹

DR. E. P. DAVIS, of Philadelphia, said that in modern obstetric surgery he did not think the Porro operation could hold its place. The complete extirpation of the uterus, as described in the paper, afforded the best, quickest, and safest method. He had once made the mistake of opening a uterus which had become infected by a dead child, and the result had been disastrous. Dr. Boldt's method was to apply clamps to the broad ligament, extract the child, and then ligate; but he had found it advantageous to apply the clamps as nearly as possible to the ovary, then ligate and cut off before removing the uterus. All who operate upon the pregnant uterus by hysterectomy must remember the artery which accompanies the round ligament, as it is often of sufficient size to demand ligation. In nine hysterectomies on the pregnant uterus he had found it convenient to clamp and ligate as he went along. In one case there was a hematoma of the left broad ligament occasioned by such a clamp as was used by Dr. Boldt; hence he now avoided continued pressure on the broad ligament by clamps. He wished to emphasize the statement that the question of the possibility of a normal delivery cannot be determined by the pelvic diameters. In four recent cases, seen by others as well as by himself, there was every human probability that each would require abdominal delivery. All were dwarfs. One had a true conjugate of 7.5 centimetres; another, a multipara, had lost five children by difficult forceps deliveries. Two of these women required delivery by Cesarean section. The woman with the true conjugate of 7.5 centimetres was successfully delivered by axis-traction forceps and springing the sacroiliac synchondrosis. The other patient was spontaneously delivered in her lodging. He would say, therefore, at the present time that the choice of the method of delivery must not be based on the pelvic measurements, but on a careful

¹ See p. 41 of this JOURNAL for July.

consideration of all the factors entering into this most difficult problem.

An experience with nine hysterectomies with intrapelvic treatment of the stump had convinced him of its advantages. It was taken for granted that the woman elects to be made sterile. If the amputation is made through the lower uterine segment there is very little danger of injuring the ureter, whereas there is great danger in Cesarean section. A further advantage is the fact that the relations of the vagina are less disturbed afterward if the small stump is left at the apex than where the removal is total. If the woman has not been infected before the operation no attention need be paid to the cervical canal. He had never seen any infection develop from the ordinary cervix of pregnancy. Dr. Davis heartily indorsed the ground taken by Dr. Boldt, and called attention to the uncertainties of diagnosis and the advantages of the intraperitoneal treatment of the stump.

DR. PHILANDER A. HARRIS said that twice during the past year he had met with cases in which there was the absolute indication. In one there had been a suppurative condition of the vagina, so that the vagina had become obliterated, all but a small pouch. This woman had been in labor two days. He did a Porro operation, but left a portion of the cervix in place. The method of clamping and cutting would be found both excellent and rapid. His patient made a good recovery, but there seemed to be a necessity for drainage through the vagina. He accordingly inserted a gauze drain and she made a complete recovery. Twelve months before the woman had been in a hospital with a granular condition of the vagina, and apparently conception had taken place before the granulating process had been completed. This explained the occurrence of pregnancy in spite of the vagina having become closed. He agreed with the last speaker regarding the great difficulty of determining the amount of osseous obstruction to the passage of the fetus through the pelvis.

DR. ROBB cited a case to show the advisability, in some instances at least, of intrapelvic treatment of the pedicle. The case was that of a woman at full term with a true conjugate of two centimetres owing to the encroachment of a fibroid. The fibroid was interstitial and originated at the internal os. The uterus was opened and the child delivered, after which it was possible to raise up the tumor and treat it. The child and mother made an uneventful recovery.

DR. A. P. DUDLEY said that for years he had advocated the intrapelvic method of doing hysterectomy, but under the circumstances he would change around and say that he would in the future do complete hysterectomy as described by Dr. Boldt.

DR. J. TABER JOHNSON spoke of a case in which there was a large tumor and a six-months fetus. In another somewhat similar case the tumor was very much larger and the child at full term. The tumor was first removed as in a Cesarean section, and then the uterus was amputated above the internal os.

In both cases the patient made an excellent recovery. He did not see how the chances of recovery could have been benefited by spending more time in taking out the whole uterus. It could not be said that in all cases it would be better to remove the whole uterus.

DR. BOLDT said that his object in reading his paper was to elicit discussion on the Porro operation and total hysterectomy. The moment one treats the cervix within the pelvis it ceases to be a Porro operation; the true Porro operation involves the extraperitoneal treatment of the pedicle, and this operation he considered a poor one compared with total hysterectomy. He thought it was better to remove the bit of cervix, as the additional time required was insignificant. Ligating the broad ligament at the same time as the application of the clamps he did not do, because it took time and he desired the child to get the benefit of the maternal circulation as long as possible. Cesarean section and symphyseotomy should always be performed for the relative, and not for the absolute, indications. With proper care injury to the ureter should be avoided.

Second Day—May 25.

OBSERVATIONS IN REGARD TO GENERAL ANESTHESIA,
ESPECIALLY BY THE SCHLEICH MIXTURES.

DR. HENRY J. GARRIGUES, of New York, read a paper on this subject. He said that according to Schleich's theory the composition of the anesthetic should be such that it should have a boiling point proportionate to the body temperature. For short operations he recommends an anesthetic having a boiling point identical with the temperature of the body, and for long operations one having a boiling point two or three degrees Centigrade higher. The latter he recommends for operations on patients with fever. By experiment Schleich found that the best mixture is composed of chloroform, sulphuric ether, and petroleum ether with a boiling point of 140° to 149° F. Petroleum ether was selected because, of substances of this nature, he found that the largest quantity of petroleum ether could be injected into the organism without giving rise to unfavorable symptoms. His mixture No. 1 contains one-fifth chloroform, and No. 2 a little more than one-fifth, while No. 3 mixture contains a little less than one-fourth chloroform.

Dr. Garrigues said that his personal experience, which was entirely clinical, had not entirely demonstrated the correctness of the theory of Schleich regarding the relation between the boiling point of the anesthetic and the temperature of the body.

The essential features of a good general anesthetic are: (1) safety, (2) speed, (3) comfort of the patient, (4) simplicity, and (5) economy. Like all other anesthetics, it contains the danger inherent upon producing unconsciousness artificially, but no death has been reported as a result of using Schleich's anesthetic. The general effect of the anesthetic, both during

and after operation, had been to him very satisfactory. In regard to the speed, it ranges between chloroform and the A. C. E. Mixture. With regard to the patient's comfort, its effect was simply amazing, there being very little nausea or vomiting and a very rapid return to consciousness. With regard to simplicity, this new method leaves nothing to be desired. The question of economy is worthy of consideration in hospital practice. The urine was examined in every case the day after giving the anesthetic, and in every case it was found normal if the urine had been normal prior to the administration of the anesthetic. One patient, an alcoholic, went under the anesthetic rapidly and required only a small portion of the anesthetic. The average duration of the operations was fifty-two minutes, but in a few instances it extended to two or three hours. Frequently the Trendelenburg position was used. He had found Allis' ether cone to work best with this anesthetic, and ordinarily it was not removed at all from the patient's face. At the beginning the top was left open; later, when nearly unconscious, the top was folded together and was kept so a good part of the time. By a double tube attachment to the bottle the mixture can be readily poured on the cone at a speed varying from drops to a stream of the mixture. On an average 1.5 cubic centimetres were administered every half-minute. He had used the No. 1 mixture almost exclusively. He began with the weaker solution in every case, and if anesthesia were not produced in ten minutes a stronger mixture was employed. The average quantity used to produce anesthesia had been 17.5 cubic centimetres; the least amount was 7.5 cubic centimetres, and the highest 35 cubic centimetres. The total amount used during the whole operation had been much smaller than that of others, as he had used on an average only 51 cubic centimetres for the average time of 52 minutes. Dr. Garrigues expressed the belief that the reason chloroform was still used by some surgeons, in spite of the demonstrated greater danger, was because of its rapidity of action. If speed were to decide the question, the gas-ether method should be the best, because it is claimed that anesthesia is complete in two minutes; but the difficulties inherent in the use of nitrous oxide gas must limit its employment to hospital practice. Compared with other anesthetics, the Schleich mixture had given very satisfactory results regarding the time necessary to anesthetize the patient. The average time had been six minutes; the minimum two minutes, and the maximum seventeen minutes. Dr. Brunner, in his excellent article on etherization, gave the average time as 8.5 minutes. Much less accumulation of mucus in the mouth and throat had been observed with the Schleich mixture than with ether, and there had been less of that slight cyanosis often observed in connection with the Trendelenburg position and the use of ether. In 71 per cent of the cases there was no vomiting at all; in 20 per cent it was slight; in 2 per cent moderate; and in none of the cases was it severe. There was a tendency to diminution in the volume of the pulse, but

nothing serious in this respect had been noted. The real danger with the Schleich mixture, as with other anesthetics, was in the effect on respirations. They had been invariably increased, the minimum being 24, the maximum 65, and the usual rate between 30 and 40. In three cases there had been an arrest of breathing, which had, however, yielded readily to the usual measures for resuscitation. The respirations should be carefully watched; not only are they deep and labored when the anesthetic is pushed too much, but slow and superficial breathing is of still worse import and should be an indication for the immediate interruption of the anesthetic and the employment of the usual remedies for failing respiration. In nearly all the cases the pupils were contracted. According to Schleich, the contracted pupil is that of natural sleep and the dilated pupil is associated with carbonic acid poisoning; but personally he always looked upon the dilated pupil as a bad sign. The patients regain consciousness usually quite rapidly, the minimum having been one minute, the maximum forty minutes, and the average time nine minutes. In conclusion, Dr. Garrigues said he thought he was justified in recommending Schleich's method of anesthesia for general use, and especially for gynecological practice.

DR. W. R. PRYOR said that petroleum ether is a pure benzine, and the only manufacturer of it in this country is Cooper. It should not be confounded with rhigolene.

DR. BOLDT said that in estimating the advantages and dangers of the mixture one should remember that these cases had been given the anesthetic under exceptionally favorable circumstances—*i.e.*, under the direct supervision of an expert. Personally he had found the Schleich mixture satisfactory, as regards the final outcome, when it had been administered under Dr. Garrigues' supervision, but even under such circumstances he had noticed that during the anesthesia the patient showed a greater tendency to become rigid at intervals than where ether or chloroform is used. He had personally observed three instances in which the cyanosis was so deep that it had been considered necessary to resort to another anesthetic. In these cases Dr. Garrigues had not supervised the anesthesia. In one of them the cyanosis was so great that the anesthetizer declined to administer it further, and when ether was substituted everything went well. This case had occurred in private practice. He preferred ether to the Schleich method.

DR. H. T. HANKS said that he had had a somewhat similar experience to that of the last speaker. It had been used about one month in the Woman's Hospital of New York, and its use had been discontinued because they had been unable to observe any advantage from the new anesthetic over ether. Cyanosis and severe nausea and vomiting had been observed with it, and it had not been found more rapid in its action. The anesthetic in these cases had been administered by the members of the house staff.

DR. PRYOR said that he had come to use the No. 1 exclu-

sively, employing the Esmarch inhaler. It worked very smoothly, and there seemed to him more in the Schleich mixture than a diluted chloroform. He thought a more profound narcosis was obtained with less of the anesthetic agent, and that the recovery from its influence was much more rapid. He had given it in a case of bad sepsis with broncho-pneumonia without any increase in the trouble or any increased rise of temperature. He had not tried it in laparatomies, but in vaginal work it seemed to him the best anesthetic. It would not do for the anesthetizer to apply the anesthetic intermittently; it must be dropped almost continuously like chloroform.

DR. MALCOLM MCLEAN, of New York, said that a mixture of the vapor of the Schleich anesthetic with the atmospheric air makes a very explosive mixture, and therefore one should guard against having an open flame near by.

DR. PRYOR said that in operating in a close room by night in an emergency case he noticed that the room became "foggy" and those present seemed to feel uncomfortable, although at first they did not know why. In this room there was an open flame. On opening the windows the air of the room cleared up and all present immediately felt better. He had had considerable correspondence with Squibb and other chemists, and they said that the "solution" was really not a solution, but a mixture like the A. C. E. Mixture, and that the various ingredients evaporate in succession.

DR. GOFFE said he had given the Schleich mixture in three cases. In the first one the anesthetic acted well, but in the second and third there was deep cyanosis, necessitating a change to ether. Since that time he had not used it.

DR. KELLY said that in comparing this mixture with ether and chloroform he would say that ether had never had a fair chance in this country because of the wretched way in which it is given. Patients who have had ether given them in different places can give very important information on this point.

DR. CHADWICK remarked that as Boston might be called the headquarters of ether, they had perhaps become more familiar with this agent; at any rate, in that city, in both private and hospital practice, it was customary to entrust the giving of the anesthetic to the nurse. This in itself spoke volumes for the safety of ether.

DR. MANN said he had always been an advocate of ether and had used it almost exclusively, but last year he had had an unexpected yet instructive experience with this anesthetic. He had had four deaths in cases of abdominal section or vaginal operation. One of them was a hopeless case from the start; the other three died of uremia a week or ten days after the operation. This had led him to study the literature of the subject very carefully and to have the urine examined in every case in which ether was to be given. Out of 20 or 30 cases, in upward of 50 per cent albumin and granular or blood casts were found in the urine. In most of the cases the albu-

min and casts disappeared in about one week. A similar experience had been reported by an observer in Boston. If this were true, ether certainly could not be considered as safe as we had become accustomed to believe. In not one of the fatal cases had albumin been found in the urine prior to the etherization. He had subsequently learned that in one of the patients there had been an attack of acute nephritis some years before. All of the patients were about 50 years of age.

DR. NOBLE said that some years ago he had extensively investigated this subject and that Dr. Kelly had done the same, and that they had both arrived at about the results already stated. Since that investigation he had made it a practice to make the patients drink water very freely and to leave saline solution in the abdominal cavity.

DR. BOLDT said that sometimes the urine would be reported to him as absolutely free from casts, and a personal investigation would show a trace of albumin and a few casts. Both chloroform and ether are well known to set up an acute nephritis.

DR. A. P. DUDLEY said that one of the best works on the effect of ether on the kidneys, he believed, was that by Dr. William Henry Porter, of New York. Personally he had reported three deaths from acute suppression of urine after laparotomy. These were simple cases of unrecognized chronic nephritis lighted up by the anesthetic. He now insisted upon giving his patients plenty of air during the operation, for unless this was done increased work would be thrown upon the kidneys. If there was the slightest reason to believe the kidneys were damaged, he invariably gave chloroform, and ordered a wet pack of one quart of the infusion of digitalis over the region of the kidneys immediately after operation.

DR. GARRIGUES closed the discussion. He had noted the occasional rigidity of the patient when using Schleich's mixture No. 1, and for this reason he would advise having the No. 3 solution at hand where greater relaxation is required. As with ether, it is not safe to have an open flame nearer than one yard from the anesthetic cone. Although it was now known that these are mixtures and not solutions, it does not follow that the different ingredients evaporate successively from the body as they do in the laboratory. Schleich maintains that they do not evaporate separately. He was of the opinion that it is almost criminal to allow a nurse to give any anesthetic. Although it could not be denied that ether acts very injuriously upon the kidneys, it should be remembered that nothing would be gained by changing to chloroform. This nephritis, which is common to both ether and chloroform, usually disappears in a very short time. As by the Schleich method much less of the anesthetic is required, this is an advantage as regards the effect on the kidneys.

OPERATION FOR THE RELIEF OF INCARCERATED PREGNANT UTERUS.

DR. MATTHEW D. MANN, of Buffalo, read this paper.¹

¹ See p. 21 of this JOURNAL for July.

DR. H. D. FRY, of Washington, D. C., said that in 1895 he had had a case in which the same condition was present. The woman entered the hospital about four months pregnant. Physical examination, together with the history, made the diagnosis of incarceration very clear. In the vast majority of cases the uterus can be restored to its proper position. Unless this effort has been made under an anesthetic it did not seem to him that all had been done in this direction before resorting to operation. This was the only case in which he had failed to put the uterus in position in this way. Where this procedure fails it was certainly justifiable to open the abdomen, because the alternative risks are still greater. Possibly the return to the retroverted position might be prevented by the use of a pessary. In his case he had prevented this by a ventral suspension of the uterus, and the woman had gone through her pregnancy and confinement without trouble. He knew of only three cases in which ventral suspension had been done deliberately during pregnancy. Another case had been operated upon in this way at the Johns Hopkins Hospital, and afterward came under his care. Although she was subject to epileptic fits, the patient went on, in spite of these and of the operation, through her pregnancy without incident. In still another case there was no suspicion of pregnancy until an operation was done for the replacement of a retrodisplaced and adherent uterus. She had just missed one period, and aborted a few weeks later, evidently as a result of the operation.

DR. HANKS remarked that it should be distinctly understood that this operative treatment should be a last resort.

DR. A. LAPHORN SMITH said that he had operated upon a case on a diagnosis of ovarian cyst made by three assistants. To his chagrin he found, at the time of operation, that it was a pregnant uterus. The uterus was stitched to the abdominal wall and the patient went through a normal pregnancy and confinement.

DR. P. A. HARRIS reported a case occurring about one year ago. Every effort was made, both with and without anesthesia and by the aid of a pessary, to keep the uterus in proper position. There was some fever and also some evidence of peritonitis. During an absence of four days the uterus assumed its proper position, possibly as a result of the efforts that had been made together with the influence of posture.

DR. MALCOLM MCLEAN described a case that he had reported about three years ago. The uterus was held down in the true pelvis, and there was a tumor above and to the left of the anterior superior spine of the ilium. On opening the abdomen it was found that the whole mass was the uterus—not a double uterus, but simply an effort of Nature to relieve the uterus from its bad position. The tumor was really a large and thin-walled hernia of one portion of the uterus. With great difficulty the uterus was liberated. As soon as the organ was released it at once assumed its usual globular, symmetrical shape. The woman went to full term and was delivered normally.

DR. MANN said, in closing, that he took it for granted that a case would not be considered irreducible until an effort to release the uterus had been made under an anesthetic. It seemed to him that any one who had once pulled out one of these uteri from beneath the sacral promontory, and had experienced the difficulty in doing this, would hardly think it necessary to perform ventral fixation. Of course the operation was advised only as a last resort.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

One Hundred Cesarean Sections.—Leopold and Haake¹ report 50 cases of Cesarean section performed since January, 1893, which are a continuation of the first group of 50 cases published by Coerner in 1893. The number of confinements during this time was 22,358, there being thus one Cesarean section to every 223.5 confinements. The 100 cases consisted of 71 conservative sections and 29 after Porro. Owing to the improved technique and more thorough asepsis, the operation has been performed with greater frequency during recent years and the indications for the operation have been broadened. The indications for the perforation of the living child have become more limited, while the relative Cesarean section is more frequently performed.

A conjugata vera below 6 centimetres is considered at the Dresden clinic to be an absolute indication for Cesarean section. Such an arbitrary limit, however, is only of general value, because in judging a given case a fraction of a centimetre will not decide for or against an operation. For it must not be forgotten that a conjugata vera a fraction above 6 centimetres and a large child may necessitate Cesarean section, while a lesser diameter and a smaller child may be delivered through craniotomy. It is more difficult to fix a numerical limit above, for here the prophylactic version competes with the relative Cesarean section. The Dresden clinic has obtained most excellent results from prophylactic version, especially since performing the version in Walcher's position, through which a not inconsiderable increase of the true conjugate is obtained. Leopold states that in a rachitic pelvis with a conjugata vera of 7 centimetres, and in a uniformly flat rachitic pelvis, 7½ centimetres is the lowest possible diameter at which prophylactic version can be expected to give satisfactory results. In 93 cases in which Cesarean section was performed on account of pelvic contraction, the following types of pelvic deformity are noted: (a) 7 uniformly contracted pelvis; (b) 11 flat rachitic pelvis; (c) 65 uniformly flat rachitic pelvis; (d) 2 obliquely contracted flat rachitic pelvis; (e) kyphotic uniformly contracted pelvis; (f) 2 obliquely contracted pelvis; (g) 1 osteo-

malacic pelvis; (h) 1 uniformly contracted pseudo-osteomalacic pelvis.

Porro Operations.—The conditions required for a successful performance of the conservative Cesarean section are the following: 1. The patient must have strong and regular pains. 2. Her general condition must be good and free from disease. 3. Every possibility that a patient could have been infected prior to the operation must positively be excluded. 4. The patient must not have a decided rise of pulse or temperature. If any of these conditions should be present the operation of conservative Cesarean section should under no conditions be performed, and the operator should insist upon the removal of the uterus after Porro. Besides the absolute requirements, it is desirable that the membranes be intact at the time of operation or have only recently ruptured. Repeated vaginal examinations are most objectionable. Danger from gonorrheal infection cannot be too strongly emphasized, and the authors take a most decided stand against the performance of Cesarean section in the presence of gonorrhea. For this reason careful examinations of the vaginal and cervical secretions are advised. In the Dresden clinic every patient is subjected to this most careful examination. In 4 cases of gonorrhea which were otherwise suitable for conservative Cesarean section the Porro operation was performed. In 9 cases excessive pelvic contraction indicated the Porro operation from a humanitarian point of view, as it was considered unwise to expose the woman to a renewed conception. These 9 cases consisted of most pitiful subjects, dwarfed in stature, and a renewed pregnancy would undoubtedly have endangered their lines. In two other cases the Porro operation was selected on account of general debility complicated by extensive pelvic deformity, while in two cases grave cardiac disease contraindicated the conservative Cesarean section. In one of the latter cases there also existed a nephritis, which in itself would have indicated the Porro operation. As is well known, nephritis predisposes to an atonic condition of the uterus and consequent hemorrhage. Thus, it is always a dangerous experiment to return the uterus *in toto* into the abdominal cavity. In 5 cases conservative Cesarean section had been decided upon and the uterus was sutured and ready to be returned into the abdomen, when the ensuing uncontrollable hemorrhage necessitated the removal of the uterus. Leopold's experience has demonstrated to him that it is unwise to waste time and the patient's strength in the efforts to control a uterine hemorrhage, but that it is better practice to immediately amputate the uterus. It is certainly not surprising that patients who have lost great quantities of blood have a less chance to recover and are more liable to thrombosis and embolism and also prone to puerperal infection. Tumors of the uterus or ovaries necessitated the Porro operation in 4 cases. In 3 of these the new growths were carcinomata, while in the fourth a large medullary sarcoma of the ovary precluded the possibility of a conservative operation. Pseudo-osteomalacia and true

osteomalacia indicated the Porro operation in 1 case each, while in 2 others the patients were brought to the hospital with extensive lacerations of the uterus.

Leopold's statistics show a greater frequency of Cesarean section in multiparæ, the proportions being 60 multiparæ to 40 primiparæ. In the latter, barring those of extreme deformity, it is usually advisable to treat the first confinement expectantly and to test Nature's powers to deliver the child per vias naturales. Only in extreme cases, and when the previous history shows the impossibility of obtaining a living child by other means, can Cesarean section conscientiously be advised, and in such cases the patient is usually willing to assume the grave risk with the prospective object of obtaining a living offspring. Repeated Cesarean section was performed on 18 patients. In all these cases the children were delivered alive. The statement so frequently made, that Cesarean section sterilizes and makes a subsequent pregnancy improbable, already disproved through Coerner's report, should forever be silenced after this publication.

As to the method of operation, Leopold adheres to his old and well-known technique and refers to his former publications dealing with this subject. It may, however, be stated that he continues the use of the elastic ligature around the cervix for the purpose of arresting hemorrhage, and his experience has not shown to him that it predisposes to uterine hemorrhage. His main object, however, in continuing the use of the elastic tube is that it enables him to perform the operation with greater leisure, which again facilitates the demonstration of the operation to a larger audience, which fact he considers most advisable. Silk is the only suture material employed, and he closes the uterine wound with a number of deep and superficial interrupted sutures. Except in one case there was no suppuration of the sutures, and in this case the presence of gonococci was demonstrated. Before giving the anesthetic, and at the beginning of the operation, a hypodermatic syringe filled with ergotin is administered. It is advisable to make proper preparations for the revival of the child, as in the majority of cases it is delivered asphyxiated. This is undoubtedly due to the administration of an anesthetic, as most children smell strongly of ether.

Results of the operation for the mother: Of the 100 operations 10 ended fatally, that is, 10 per cent. The conservative method had a mortality of 9.8 per cent, while 3 died after a Porro operation. Leopold lays particular stress upon the fact that his sole object in operating is to save the life both of mother and child, and that cases are not selected to obtain ideal statistics. The operation was performed in a number of cases in which the prognosis was bad from the outset but in which the operation was the sole means of saving one or two lives. If these cases are deducted there remain only 5 deaths attributable to the operation, equal to 5.20 per cent. The chances for the child were most favorable after Cesarean section, 71 children being

delivered alive, while after Porro operation 4 were delivered still-born. The puerperium was afebrile in 51 cases, in 13 a slight rise of temperature occurred once, while septic infection was noted in 13. Two of the latter cases reached the clinic in a septic condition, while in 4 others the sepsis was attributed to gonorrheal infection. Thrombosis occurred 4 times, bronchitis 5, and of mastitis, nephritis, cystitis, eclampsia, arthritis, gonorrhea, psychosis, one case of each was observed.

Hecking¹ reports a case of conservative section from Leopold's clinic in which the puerperium was complicated by a septic condition traceable to gonococci present in the lochia and in a suppuration of the abdominal wound. Disturbances of the puerperium after conservative Cesarean section are not rare and are attributable to different causes. The most common type is a septic infection, similar to that observed after ordinary laparotomy, caused through infection from the operator's hands and instruments, or an insufficient closure of the uterine wound, permitting the escape of lochial secretions into the abdominal cavity. 2. Hemorrhage from the uterus in consequence of faulty closure of the uterine incision. 3. Intestinal obstruction, frequently fatal, mostly due to infection. 4. Excessive distension of the intestines, a result of temporary intestinal paralysis; this can generally be avoided if, before returning the uterus into the abdominal cavity, the small intestines are removed out of the small pelvis. Such meteorismus may give rise to the most alarming symptoms, which, however, disappear after timely rectal injections. 5. A more rare complication is a thrombosis of the veins of the pelvis and lower extremities, followed by phlegmasia or pulmonary embolism. 6. Disturbances from gonorrhea of the urethra, vagina, and uterus. The gonococci, although usually confined to the cervix, may invade the uterus proper, and from there extend to the abdominal incision, causing here a suppuration in which gonococci may easily be detected. Hecking's case belonged to the latter type, and emphasizes the great dangers of Cesarean section in the presence of either acute or chronic gonorrhea.

T. C. Erb² states that there is no operation in obstetrics where decision plays a more conspicuous part in the prognosis than Cesarean section. When it is performed after the mother and child are exhausted the mortality is high, but the elective Cesarean section subjects the mothers to about one risk—septic infection—while the child's chances are almost nothing. Erb has gathered the following statistics together to show the good results of elective Cesarean section: In 13 cases operated on before labor had begun, 10 women and 13 children recovered; of 6 cases operated upon at the beginning of labor, 6 women and 6 children recovered; of 12 cases where the women had been in labor from two to six hours, 10 mothers and 11 children recovered; of 18 cases where the mothers had been in labor from nine to twelve hours, 8 mothers and 13 children were saved.

Brown³ reports a case of Porro operation in which he performed the conservative Cesarean section three years ago. The woman was afflicted with spondylolisthesis of a very high degree, and for that reason it was considered advisable not to subject her to the risks of a renewed pregnancy. Uneventful recovery.

Walcher's Position.—Huppert¹ writes about the value and importance of Walcher's position, which report is based upon observations made at the Dresden Maternity Hospital. During the year 1889 Walcher announced the important fact that the conjugata vera of a contracted pelvis varies in diameter according to the woman's position. This observation has been verified by others, especially through the experiments of Klein. The junction between the sacrum and ilium was formerly thought to be a true synchondrosis, but Barkow, Kölliker, and Luschka have shown it to be a true joint with synovial membranes and fluid. The mobility of the sacro-iliac joints permits rotation, and a depression of the symphysis results in an increased diameter of the conjugate of the inlet. Such a depression and consequent enlarged diameter can be obtained by placing a bolster behind the sacrum and permitting the patient's limbs to hang, unsupported, over the edge of a table or foot of the bed. The importance of Walcher's discovery was at first belittled, but numerous careful observations have proved its immense value and shown that Walcher's position may permit delivery of a living child per vias naturales where otherwise Cesarean section or embryotomy would be required. Huppert describes 21 cases *in extenso* in which the Walcher position was employed. In all of these cases there existed pelvic contraction, usually of the flat rachitic type, with diameters varying from $6\frac{1}{2}$ to 9 centimetres. In 18 of these cases the employment of Walcher's position was followed by the desired results; in 10 normal delivery was impossible in spite of an obtained increase. Huppert states that in nearly every case an increase varying from $\frac{1}{2}$ to $1\frac{1}{2}$ centimetres was observed. The correctness of this observation was verified by measuring the diameters of the fetal head, because in many cases the diameters of the latter exceeded considerably the diameters of the pelvic inlet. The pains in most cases of contracted pelvis were, as is generally the case, irregular and feeble, but it was noted that Walcher's position caused an immediate increase of severity and regularity. Huppert's observations demonstrate one important fact—namely, that Walcher's position is of benefit only if the fetal head is yet movable above the brim or has entered the inlet with a small portion of its diameter. It is also almost essential that the membranes should be ruptured, and its great value is especially noticeable in those troublesome cases of premature rupture of the membranes. In these cases Walcher's position enables the head to descend and rapidly dilate the contracted cervix. The period during which Walcher's position was sustained varied from twenty minutes to three hours,

according to the size of the fetal head and the degree of pelvic contraction.

Quinine as a Substitute for Ergot in Midwifery.—O. C. Mackness⁴ states that ergot is contraindicated during labor, but should postpartum hemorrhage occur it is useful in large doses. Ergot is useful in repeated small doses where abortion is threatened, hemorrhage occurring without pain and the os uteri being closed. Further, it is useful in small doses in subinvolution of the uterus. Quinine, eight grains, followed by four grains in an hour, and repeated after another hour if required, should be given wherever there is delay in the labor due to exhaustion of the uterine muscles, provided the delay is not caused by obstruction in the passage or deviation from the normal in the fetus. In these latter cases, or where quinine fails to produce sufficient uterine contractions, forceps should be applied or other means of delivery resorted to.

Dry Labor.—G. L. Brodhead⁵ has found that in fully fifteen per cent of all cases of labor the membranes rupture either before or during the first labor pain. The dangers to the child are two in number—asphyxia and meningeal hemorrhage; those of the mother, laceration of the soft parts, edema, pressure necrosis, hemorrhage, liability to sepsis, slower convalescence, and rupture of the uterus. As soon as the membranes are broken an examination should be made to ascertain whether any accident, such as that of a prolapsed cord, has occurred; also to ascertain the position of the child. The sooner labor commences after rupture of the membranes the better. Brodhead administers at once a large dose of castor oil and glycerin, followed shortly by ten grains of quinine, to be repeated every three hours, with one-thirtieth grain of strychnine sulphate every two hours, careful watch being kept for unpleasant symptoms. Before the digital examination is made the external genitals should be scrubbed with soap and water and then with a 1 : 2000 bichloride solution. Another good plan is to douche the vagina with a hot lysol solution every six hours to the amount of three quarts. These douches keep the vagina sweet and clean, soften the mucous membrane, and stimulate uterine contraction. If in one half hour after the commencement of the second stage of labor no advance has been made, Brodhead advises the use of the forceps.

Subperitoneal Emphysema after Rupture of the Uterus.—Dischler¹ discusses the diagnostic importance of intrauterine emphysema following laceration of the uterus, and, based upon an investigation of current literature and two cases occurring in the Dresden Maternity Hospital, he proposes and answers the question whether or not this symptom indicates an amputation of the uterus. As to the general prophylaxis of rupture of the uterus in cases of pelvic contraction, it is the universal opinion that the woman should be placed upon that side which appears most distended by the advancing head. Every bearing-down effort while

the head is yet high must strictly be interdicted. To accelerate labor Walcher's position is to be employed, which may be aided by pressing the head into the pelvis. In this, however, great care and judgment must be used. In threatening rupture it is advisable to deliver as soon as practicable, and the method which effects delivery with the least possible stretching of the lower uterine segment should be selected. Thus, in head presentations, perforation and extraction; in transverse presentations, version with greatest care and under deep anesthesia if the child is alive, otherwise embryotomy; if rupture has occurred and the child has made its escape into the abdominal cavity, immediate laparotomy and removal of the child; if the child is in part in the abdominal cavity, in part in the uterus, extract per vias naturales if extraction is easy. Should the surroundings be favorable or delivery be followed by hemorrhage, the abdomen should be opened at once. Neither tamponade nor compression, nor both combined, can always be relied upon to arrest hemorrhage after rupture. Ligation per vaginam is also at times unsuccessful. Laparotomy is the only reliable method of arresting the bleeding, by inspecting the wound and ligating every bleeding point. If the bleeding stops on its own account and the pulse improves, the case should be treated expectantly. Morphine should be freely administered, absolute rest, catheterization of the bladder, but no irrigation of the vagina or of the peritoneum through the vagina is permissible. If the uterus has been infected or contains a fibroid, which in itself would indicate removal of the uterus, the organ should be amputated. The cause, degree, and location of the laceration is according to the position of the child. The descending occiput distends that portion of the uterus immediately adjacent, and, as left occipito-anterior positions are most common, a laceration of the left side is most frequently met with. If air has entered the uterine cavity prior to the laceration, or gases of putrefaction are formed within, these gases enter the newly-formed tissue gaps and produce what is known as subperitoneal emphysema. Its exact situation varies according to the intrauterine and intra-abdominal pressure, and also whether the peritoneum is intact or lacerated. The intrauterine, subperitoneal emphysema is a positive symptom of rupture of the uterus, and because it facilitates the rapid spreading of infectious material it adds additional danger to an already serious complication and demands immediate laparotomy and removal of the uterus. If rupture of the uterus and intrauterine emphysema are diagnosed, no time should be lost and wasted with attempts to deliver per vaginam. The abdomen should be opened at once, the rupture located, and the uterus removed after Porro.

GYNECOLOGY AND ABDOMINAL SURGERY.

Senecio in Functional Amenorrhœa.—W. E. Fothergill¹⁴ believes senecio is not an ecboic, that the drug will not provoke

menstruation in cases of marked anemia or advanced phthisis, but will do so in cases of functional amenorrhea. He also states that it does not relieve pain.

Sterilization of Catgut.—C. Harrington¹⁶ states that catgut can be thoroughly sterilized by formaldehyde. He tried a number of experiments on catgut, using a watery solution of formalin, varying from one to five per cent, for from two to twenty-four hours. The smaller-sized catgut lost strength, but the larger skeins were not affected. He also made a number of experiments, using paraform pastilles heated over a small lamp; by this method the skeins were not exposed to any moisture and lost neither strength nor flexibility.

Senile Uterine Catarrh.—J. H. Croom¹⁶ states that in regard to the differential diagnosis between primary corporeal cancer and senile uterine catarrh the following points should be borne in mind: First, in most cases of primary fundal cancer periodic and severe pain is an early and prominent symptom, whereas in senile uterine catarrh the pain is irregular and colicky, or, if not, it is slight and constant. Secondly, in cancer, fetid discharge, at least in the earlier stages, is unusual, because the os is closed and the surface of the cancer is protected from external influences; whereas in catarrh fetid discharge is a prominent and early symptom. Thirdly, local examination in cancer finds the uterus distinctly enlarged, sensitive, and it early becomes heavy and fixed; whereas in the simpler condition the uterus either is normal or only slightly enlarged, and remains freely movable throughout.

Congenital Lacerations of the Cervix.—Referring to the publications of Penrose and Noble, Heil³ reports three observations made in nulliparæ in which the cervix appeared as if lacerated in preceding confinements. In one case the simulating tear extended well into the parametrium. These cases have no clinical value, as Heil found no other pathological changes; but their observation is of the greatest forensic importance, because lacerations of the cervix usually signify injuries sustained in preceding confinements.

Peritoneal Tuberculosis.—Schramm¹ reports a case of peritoneal tuberculosis in which the patient has remained perfectly well eight years after laparotomy. At the time of the operation the abdomen contained large quantities of fluid, the peritoneum was immensely thickened, and all the abdominal viscera showed innumerable tubercular nodules. An examination of excised portions of the peritoneum and omentum showed tubercle bacilli in large numbers. Schramm states that local applications of iodoform, carbolic acid, or sublimate are of subordinate importance, for the curative effect consists in the active hyperemia following the free opening of the abdomen.

The Disinfecting Properties of Alcohol.—Goenner¹⁸ has made a series of investigations to prove or disprove the statements of Ahlfeld and Vahle as to the antiseptic properties of alcohol. Goenner found that alcohol has certain germicidal

properties, but in a lesser degree than corrosive sublimate. While staphylococci and the bacillus pyocyaneus can be made harmless during a period usually occupied with disinfecting the hands, this is not the case with streptococci, and alcohol is absolutely powerless to destroy the anthrax bacillus. The best method of disinfection for the hands is a combination of alcohol with corrosive sublimate.

Enormously Distended Bladder.—W. Simpson¹⁹ reports the case of a woman from whom were drawn one hundred and ninety-six ounces of urine. This urine was foul-smelling, high-colored, and the last few ounces were loaded with pus. In addition, fully four ounces of urine were lost during the examination.

Cancer of the Breast.—J. Watson Cheyne²⁰ reports two cases of oöphorectomy for inoperable breast cancer. In one case there was an improvement for a considerable time, but the growth finally increased and the patient died. In the other case there was not the slightest beneficial result from the operation. He states that if the result of removal of the ovarian influence is to lead to atrophy of epithelium originating from the mamma, it would clearly be of advantage to have as little epithelium present as possible. It is quite probable that if too much epithelium is present the removal of the ovarian influence might not produce sufficient alteration in the body to overcome all the disease.

Ovarian Tumors simulating Inflamed Ovaries.—Alban Doran¹⁴ records six cases of small ovarian tumors which simulated oöphoritis. He states that there are no special symptoms or group of symptoms by which a small ovarian tumor can be distinguished from an inflamed ovary.

A Dermoid Cyst of the Ovary.—J. T. Firth²¹ reports a case of primary dermoid cyst of the ovary complicated by six secondary cysts of the omentum. He states that although the dermoid arising from the ovary was large, the ovarian tissue was nearly normal in appearance and size, which is very unusual under such circumstances.

Laparotomy during Pregnancy.—T. Anderson²² reports two laparotomies performed for ovarian cysts in women who were pregnant. Both women gave birth to living children, one one month and the other three months after being operated on.

Pelvic Tumors with Adhesions to the Liver and Gall Bladder.—Freund²³ describes a case of ovarian tumor adherent to the gall bladder, in which the removal of the tumor was complicated by a cholecystectomy. In a second case a uterine fibroid was attached to the liver, which adhesions gave rise to very grave symptoms.

Removal of the Uterus and Adnexa per Vaginam after Chronic Inflammatory Disease of the Ovaries and Tubes.—Buschbeck¹ has investigated the permanent results obtained at the Dresden clinic from the removal of the uterus and adnexa in chronic inflammatory changes of the uterine appen-

dages. During the years 1885 to 1897 the number of operations amounted to 87. The Dresden clinic has an average of 550 gynecological cases per annum, besides a large out-patient attendance. For this comparatively large material the number of operations is certainly small, and the maxim of that institution, not to remove the uterus and adnexa until conservative means have failed, appears to have been conscientiously carried through. Buschbeck states that the slow and somewhat tedious palliative treatment was successful in a number of cases; in others, by means of abdominal oöphorectomy, the healthy adnexa of one side were preserved. The method of treatment to be selected depends upon the condition of each individual case and the extent and severity of the pathological changes. A most minute diagnosis of the anatomical conditions of the pelvis is requisite, and in many cases this necessitates the placing of the patient under the influence of an anesthetic. Such an exact diagnosis avoids on one side the unnecessary removal of healthy appendages, while on the other it obviates the danger from a ruptured pyosalpinx during the performance of a laparotomy. Bearing these factors in mind, the vaginal radical operation was restricted to extensive chronic inflammatory changes of the adnexa on both sides.

The majority of patients operated upon belonged to the laboring class and to that class of women who are obliged to earn their own livelihood. In these cases it is especially desirable to obtain both a rapid and permanent cure, which is undoubtedly best accomplished by means of the vaginal radical operation. Of the 67 cases operated upon, only one ended fatally, showing that the operation in experienced hands is not a dangerous one. The technique is the same as described in previous publications. Important factors to bear in mind in the performance of the operation are the careful arrest of all bleeding and the radical removal of all inflammatory tissues. To obtain a thorough knowledge of the permanent results, all patients were communicated with (except 2 who had died from other causes) and requested to personally present themselves, and, if unable to do so, to report in writing. In 16 cases no answer was received; thus there remain 48 cases, of which 38 reported in person and 10 by letter. The period elapsing between the time of operation and the controlling examination was: one case, twelve years; two cases, nine years; two cases, six years; seven cases, five years; four cases, four years; six cases, three years; nine cases, two years; in the remaining eight cases, one year or less. The anatomical condition found was most satisfactory. In 34 cases the vaginal scar was freely movable and the parametria absolutely free of inflammatory infiltration. Of the 48 cases 30 state that their health is good and that they are free from pain, while 18 complain of more or less disagreeable symptoms. It should, however, be noted that 8 cases of the latter group belonged to the laboring class, and that their subjective symptoms are not severe enough to prevent them following their usual occu-

pations. Besides, all of them were grateful that the operation was performed, and stated that the present symptoms bore no comparison to those prior to the operation. Thus, summing up the results of this investigation, the facts obtained are briefly as follows: First, of 67 operations, only 1 ended fatally, equal to a mortality of 1.5 per cent. Second, of 48 cases examined, perfect ability to work and follow the usual vocations existed in 43, equal to 89.5 per cent. Third, the operation produced no new complications, fistulæ, exudations, etc.

The usual nervous disturbances following the artificial menopause were rarely observed.

Hysterectomy for Removal of Large Uterine Myoma.—D. P. Allen²⁴ states that Doyen's operation is one of the best recent operations for the removal of uterine fibroids. The operation briefly is as follows: Open the abdomen, draw the uterus forward over the pubes, incise the vaginal vault through the Douglas cul-de-sac, draw the cervix upward into the abdomen, and without ligature divide first one broad ligament, next the attachments of the uterus to the bladder, and last the other broad ligament, the broad ligaments being seized and held by assistants during the removal of the uterus and until their vessels can be secured and ligated. In this operation there is less danger from hemorrhage, less time used in the operation, a better opportunity for drainage, and less danger of wounding the surrounding structures.

Joseph Taber Johnson²⁵ states that if a woman has a fibroid tumor threatening her life or seriously menacing her health by hemorrhage, pressure, degeneration, obstruction of the bowels, peritoneal dropsy, or otherwise, it should be removed whether the woman is 30 or 60 years of age. Hysterectomy should be done in any and all cases for actual or prospective symptoms, without reference to age or whether the menopause has or has not occurred.

Buschbeck¹ publishes a report of 100 vaginal hysterectomies for fibroids and an investigation of the after-results. The operations extend over a period of eleven years and about 6,000 gynecological cases. The operation is indicated if, after exhausting other means, the growing tumor threatens the life and health of the patient and the general condition contraindicates laparotomy. Buschbeck was able to personally examine 65 cases, and found all these patients to be permanently cured and absolutely free from all subjective symptoms. Leopold, from whose clinic the above report originates, removes the uterus by means of ligatures, and is a radical opponent to the clamp method. He lost only 3 cases—certainly a very favorable result.

Removal of Fibromyomata during Pregnancy.—A. J. Wallace²⁶ removed two subperitoneal myomata and a calcified tumor weighing one pound two ounces from a woman who was two months pregnant. The calcified tumor was free, except for a few adhesions, and lay across the upper part of the true pelvis. The pregnancy continued.

Fibroid Tumors causing Inversion of the Uterus.—B. B.

Browne²⁷ reports two cases of fibroids which caused inversion of the uterus. He removed these fibroids by enucleation and traction, and then replaced the uterus in its normal position.

Enucleation of Uterine Fibroids.—W. Alexander²⁸ considers enucleation the best operation for uterine fibroids. He states that the number is no contraindication to the operation nor the size of tumor, provided it has not absorbed the uterus or appendages and left nothing worth preserving.

Uterine Fibroid.—H. D. Beyea²⁹ reports a case of an edematous fibroid of the uterus which caused edema of the lower extremities and of the anterior and posterior abdominal walls as high the transverse nipple line. The tumor was removed and the patient made a good recovery.

Intrapelvic Surgery.—C. Cleveland³⁰ advises the vaginal route when operating on unilocular, broad-ligament, and dermoid cysts of the ovaries. Large fibroids should be removed by the abdominal route, and the smaller ones, when advisable to operate at all, should be removed by morcellation from below. In cases where it is possible to do myomectomy the work should be done from above. In operating for cancer of the uterus Cleveland has found nothing to favor abdominal hysterectomy. He states that a cancerous uterus which cannot be removed by the vaginal route has reached a stage where operative interference is not justifiable. When treating a tubal or tubo-ovarian abscess that has opened into the rectum or some other portion of the intestines and is constantly discharging, he prefers to make a posterior vaginal section and attempt to reach the abscess cavity and drain it into the vagina, hoping to cure the case by drainage or to prepare the way for a subsequent hysterectomy. In pelvic abscess where it is decided to perforate and drain through the vagina, it is safer to perforate directly through the vaginal vault.

Fränkel⁴¹ describes a somewhat unusual accident following three days after removal of uterus and adnexa per vaginam, and consisting in the prolapse of the omentum. The patient was placed in the knee-elbow position, whereupon the omentum was returned within the abdominal cavity without any difficulty. The accident is ascribed to the too early removal of the vaginal tampon, which is usually left in position to and beyond the sixth day.

Ligation of Blood Vessels in Hysterectomy.—Herff¹⁸ criticises the various methods for the arrest of hemorrhage during the operation of hysterectomy, and discusses the question whether single ligation, ligation in mass, or compression with clamps gives the better results. Each one of these methods has its advantages and disadvantages, and the best results will be obtained if operators employ the method best adapted to each particular case.

Colpotomia Anterior.—In discussing the preference of laparotomy or the vaginal route in operations on the uterus and adnexa, Zweifel³² sums up his views as follows: Each case must be considered as a unit, and every operator should select

the method best adapted to the particular case and which promises to give the best results with the least possible danger. It may be mentioned that Zweifel does not coincide with the views of Veit, but prefers laparotomy in inflammatory processes of the tubes on account of the rather extensive adhesions often found in this class of patients.

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DISEASES OF CHILDREN.

Ataxia, Acute, in Childhood.—Filatoff¹ classifies all cases into four etiological varieties: (1) pseudotabes toxica, very rare in childhood but common among adults; (2) pseudotabes infectiosa, of which the diphtheritic form is by far the most frequent, but typhoid, small-pox, scarlet fever, and syphilis may be the cause; (3) pseudotabes in the form of a neurosis, including the hysterical form; (4) pseudotabes of central origin. Two hysterical cases are reported, in a boy of 11 and a girl of 10; both were cured. A third case was probably of central origin, following a cerebro-spinal meningitis attack, but its course and etiology were rather obscure; the child was greatly improved. The prognosis is usually good. The treatment must be directed toward the removal of the cause, the general building-up of the system, and massage or electricity (in recent cases) of the paralyzed muscles. Strychnine is recommended for internal use.

Bile Pigment, Presence in the Urine in Icterus Neonatorum.—Knöpfelmacher² made chemical quantitative tests with the urine of sixteen newly-born infants, and found only two in which the quantity of phosphoric acid was sufficiently large to indicate the presence of alkaline phosphate enough to render bilirubin soluble in the urine. It is this fact, that the urine does not dissolve bilirubin, which accounts for the very rare positive results in testing for bile pigments in the urine of babies with icterus neonatorum.

Calot's Method, Technique of the Reduction and Application of the Dressing.—Vulpus³ has found that Calot's method of reducing a kyphos can be greatly aided and simpli-

fied by using his method of extension by means of a screw, the force being evenly and slowly applied, with the patient in the horizontal position. While applying the plaster-of-Paris jacket afterward, suspension by the feet, the head hanging down and bearing a weight of ten to twenty pounds, has been found the most convenient position to work with. Whether narcosis is used or not, the writer has been surprised to find how well the position is borne by the patient. One case is reported in which a very marked improvement followed this form of treatment in a boy 9 years of age who had had Pott's disease for five years. A second case illustrates the usefulness of the method in non-inflammatory kyphos due to rickets. The little girl, 5 years old, was cured of her deformity, and the general condition was greatly strengthened.

Schanz³ contributes to this subject his experience with three cases. One was a boy of 5, in whom the operation was followed by the development of an abscess next to the kyphos and one behind the right ear, the psoas abscess previously present disappearing. The psoas abscess returned as soon as the child arose from his bed, and the two new abscesses formed fistulæ. The abscess on the back was probably a new outlet for the psoas abscess. The second case, in a child of 2, received no more benefit from the operation than from the ordinary method of treatment, and the profuse sweating made it impossible to keep the plaster jacket hard. The third case gave a fairly good result, although the kyphos returned to some extent—not, however, as large as before the operation. On the whole, Schanz concludes that he will treat similar cases by the methods known before Calot's operation came into use.

Constipation, Chronic, in Children; Treatment by Massage.—Cattaneo² reminds us that the dangers of chronic constipation are twofold: mechanical and resorptive. The therapy must be based upon three fundamental principles: regulation of diet, stimulation of peristalsis, and improvement of the general health, with avoidance of those hygienic errors which favor constipation. In very young infants care of diet is sufficient. For atony of the intestinal muscle strychnine has been used, and atropine when the cause is a neurosis. Electricity should be used only in the worst cases, as it is painful and cannot be borne by most children. Abdominal massage is by far the best treatment, according to the method of Heubner. Before beginning the massage a dose of castor oil or a clyster should be given to prevent old fecal masses from injuring the intestinal walls. The first séance may last three to five minutes, the later ones being gradually increased to eight or ten. After the third or fourth treatment voluntary defecation occurs, and in two to three weeks a permanent cure is accomplished. Tonic general treatment is not necessary, only the strictest hygiene, and, in the case of rachitic or scrofulous children, cod-liver oil may be administered. Ten cured cases are reported, the children ranging from $2\frac{1}{2}$ months to 4 years of age.

Diphtheria Antitoxin as an Immunizing Agent.—W. M.

Donald⁴ writes that a case of laryngeal diphtheria was discovered at the Detroit Protestant Orphan Asylum. During the next seven days 7 new cases developed. Immunizing doses of antitoxin were then administered to the remaining 87 children, with the result of practically stamping out the disease at once, one child only contracting the disease. Another outbreak occurred at the same institution six months later, and 5 cases of laryngeal diphtheria developed before it could be controlled. At this time the antitoxin was administered to 80 remaining children with even better results, every one of them escaping without contracting diphtheria.

Diphtheria of the Vulva.—W. P. Cones¹⁷ reports two cases of diphtheria of the vulva. Both cases were those of children about 2 years old. He believes that an examination of the vulva should be made in every case of diphtheria occurring in young children.

Erysipelas in the Newly-Born with Marked Gangrene; Cure.—Friedjung¹ reports a case in which the erysipelas began at the umbilicus in a 9-day-old baby and extended down the abdomen to the genitals and to the thighs and feet. Gangrene began on the scrotum and laid bare both testicles. The left foot, both sole and back, became gangrenous, the fascia being exposed. The erysipelas was treated with wet dressings, the gangrenous parts with an ointment containing one per cent of silver nitrate. Cure was complete in seven weeks, when the child was 8 weeks old and weighed 4,800 grammes. Throughout the general condition remained good and the symptoms were never alarming. There was icterus, and some dyspeptic symptoms which yielded easily to irrigation. One great aid to the favorable course and result was the fact that the baby was breast-fed by the mother throughout. At the age of $7\frac{1}{2}$ months the child was seen once more and found to have developed into a well-grown, healthy boy.

Gastro-enteritis of Children, Acute.—E. H. Nichols^{*} reaches the following conclusions on the subject: Give mother's milk, if practicable. If impossible, use best artificial foods *without* milk. Condensed milk after six months is a snare and a delusion, gives no resisting power in disease; on it children do not grow so strong, muscular, nor so rapidly as they should. Nightly baths followed by *olive-oil* rubbings, two drachms at a time. Oil reduces fever, regulates the functions of the skin and softens it. Spiced poultices in acute period during first thirty-six hours do good. Fluid extract of *hyoscyamus* is the best nightly opiate, one to three drops. High fever calls for purgatives, not antipyretics; the author usually irrigates the colon night and morning, using a large catheter or small rectal tube with the fountain syringe. He uses salt, one drachm to a quart, with the water at 90° temperature in ordinary cases, never above 110°. Sometimes a gallon is required to insure proper washing. The catheter should be detached gently, and, inch by inch, withdrawn to evacuate all fluid remaining in the pouches. In the author's experience cold rectal irrigations

result in griping and abdominal unrest. Bathing reduces temperature. Bathing the face and head with water at 60° promotes good reaction. Few drugs are good; phenacetin, salol, bismuth, and sulpho-carbolate of zinc are worth trying. Use the rectum for temperature. Beef tea ordinarily useless. Give gray powder or calomel and sodium bicarbonate if stools are acid; if alkaline, substitute bismuth for the soda (with calomel). In convalescent patients sterilized or peptonized milk can be tried if the source of the milk is known and good. There should be no exposure to the sun in summer. Street-car rides are a godsend. Moderate sunshine and change of air develop the red blood corpuscles. Never let a child "chill off," even in summer. When frequency of discharges diminishes and temperature rises in convalescence, look out for broncho-pneumonia. One half of the fatal cases terminate in the third week. Apply ice to the head very carefully, as children do not tolerate cold long; five minutes on, fifteen minutes off, will sometimes reduce fever and improve diarrhea. Continued high fever and persistent vomiting, rapid wasting, with severe nervous symptoms, denote death. The termination in boils, thrush, broncho-pneumonia, or tuberculosis is unfavorable, and relaxed sphincters with high temperature and contracted pupils are bad signs. Keep the room cool by towels tacked across windows, wet with ice water every half-hour. Keep a large piece of ice in the room. Let the child lie in a small hammock between windows. Do not fail to write instructions for parents *at each visit*.

Idiocy.—M. Bourneville⁶ reports at length and in detail a case to demonstrate the value of what he calls medico-pedagogic treatment. After giving the clinical account of the case he makes the following reflections: 1. In the family history we note inveterate alcoholism on the part of the father and periodical and severe migraines on the mother's side. 2. An interesting point is that conception undoubtedly occurred during the father's drunkenness. The mother attributes the child's idiocy to this fact, and supports her view by stating that, having, under her physician's advice, subsequently refused sexual relations with her husband except when he was sober, her last child is sound in body and spirit and has had no convulsions. 3. The patient has never had convulsions and the idiocy would appear to be entirely congenital. It was complete. At 3 years of age the child could not walk alone, was filthy in his habits, given to masturbation, was totally incapable of giving the least assistance in his washing and dressing. He swung constantly from side to side, knocked his head, bit his brothers and sisters or any child that came near him. His speech was limited to three words. He was subject to attacks of anger, and night and day he gave constant cries which were so great a cause of annoyance to the neighbors as to oblige his parents to move. This the author deems an important point, as it shows the value of placing such children in suitable institutions. At home they are simply a cause of torture to others, and this

oftentimes when the case is an absolutely hopeless one as regards a cure. 4. The case in question is extremely interesting, as presenting a transformation which at the time of his entrance into the hospital could never have been hoped for even by physicians and teachers who are not *au courant* of what results the medico-pedagogic treatment can obtain. First of all, D— was taught to walk, to develop his muscular system (by walking, jumping, going up and down stairs, light gymnastics, etc.), to become neat in his habits (by watchfulness, and regularity in putting him on the stool), to eat, undress, dress himself properly (development of the uses of the hand and sense of touch), to speak well (exercises of pronunciation and language), to read, write, and count passably well; to have an idea of colors, form, time, etc.; to acquire useful knowledge; and finally he was taught to be a very satisfactory tailor. 5. From a physical standpoint his development has been regular, as shown by the records of his weight, size, and the measurements of the head. This is largely due to gymnastics, dancing, hydrotherapy, and tonic treatment. 6. At the time of his entrance the diagnosis was *complete idiocy*. At the present time it would be *intellectual backwardness*, *slight mental weakness*, and this only in reference to school studies, because in manual work and physical intelligence he is very nearly normal. 7. If in a case of complete idiocy the results obtained were so satisfactory, how excellent would they be when the case was less severe! The earlier the treatment is begun the better, and it should be persisted in patiently for years.

Malignant Tumor of the Naso-pharynx.—J. Brault⁷ reports and describes a case in a little girl of 3½ years. The following were the most interesting points in connection with the case: 1. The extreme youth of the patient. Scheinmann noted a case of sarcoma at 4 years, and according to Monbouyran this is the only case in early childhood on record. 2. Marked deformity (frog face), which is a rare sign in malignant tumors, and is, as a rule, found chiefly in cases of naso-pharyngeal polypi. 3. The presence of fibromyxomatous tissue side by side with sarcoma. This raises the question whether perhaps there was transformation of a benign tumor into a malignant one.

Measles, Oculomotor Disturbances following.—Dreisch⁸ reports a case in a boy 9½ years old. Two weeks after an attack of measles he could not see because of a constant motion before his eyes. Under tonic general treatment and pilocarpine locally recovery was prompt. Another case was that of a girl of 8 who suddenly complained that she could not read three weeks after recovery from measles. The third case was of three weeks' duration, in a boy 14 years old, who also recovered. There had not been diphtheria nor any injury in these cases, and they were in reality lesions of accommodation. Paralysis of any kind are very rare after measles.

Measles, Rare Complication of: Spinal Meningitis.—Starck⁹ relates a case in a girl of 8 who developed symptoms

of spinal meningitis on the fifth day of an attack of measles. There were no cerebral symptoms, and the attack was very sharp and short, so that the child was convalescent in two weeks. There was no syphilis, tuberculosis, or trauma; nothing, in fact, but the measles to account for the meningitis.

Micturition, Disturbances of, in Children, and their Treatment.—Kutner¹⁰ relates two cases of obstruction due to chronic reflex spasm of the external vesical sphincter. One occurred in a boy of 8, the other in a girl of 7 years. The boy's symptoms began at the age of 6 months and were identical with those of stone. Examination demonstrated the true condition, to the surprise of the author. Dilatation effected a cure. The little girl's symptoms were of bladder paralysis. In both the presence of residual urine could be demonstrated, and proved the most important diagnostic sign.

Milk-poisoning occurring in Infants and Children who have been fed upon Pasteurized Milk.—Henry Koplik¹¹ states that pasteurization leaves a vast mass of bacteria in the milk, and says that the principal purpose of his paper is to bring to light a certain class of cases which can be distinctly labelled as cases of milk-poisoning caused by the administration of pasteurized milk to infants and children. It is not enough to have accurate percentages, but the food must be kept pure and free from acids and toxins. Even in model dairies it is impossible to keep out germs. The symptoms of milk-poisoning Koplik gives as follows: Infants or children who have taken a pasteurized milk will in many cases, as a first suspicious symptom, have frequent movements in the twenty-four hours. Children who have had only one movement will suddenly have five, six, or seven loose movements, which are at first yellow, curdled, and lumpy in appearance and of a distinct acid odor, later have an admixture of green and be of an intensely disagreeable odor. The infant is restless and has slight colicky pains, little or no rise of temperature. In some cases the baby will apparently be well and the alvine discharge be normal, when suddenly there will be a large number of greenish, ill-smelling movements. Sometimes the movements are normal in color and odor, but increased in number and very fluid. There are children who take pasteurized milk well enough for a short time, then suddenly develop a sharp attack of gastro-enteritis which endangers their existence. In all the cases reported by the author the milk was prepared by a well-known leading charity or from the best and most widely used laboratory for infant feeding. In conclusion Koplik says that his work on the subject has shown that, so far as a study of waste products could teach us, there is little difference in the digestibility of raw, pasteurized, or sterilized milk continuously prepared or modified in the same way, when administered to the same infant. As to the taste of pasteurized milk, this varies, and all observers seem agreed that, as a rule, milk heated at or above 70° C. loses its raw flavor. Pasteurized milk is an uncertain and, in some cases,

a very dangerous food for infants. Sterilization in the household must be carried on in a closed steam sterilizer where the temperature reaches 100°C ., or quite close to this point. The temperature should be maintained for a distinct length of time, and after this the milk should be cooled by first placing the bottles in running water, and then on ice or in a refrigerator below 20°C . until given to the infant.

Nephritis following Vaccination with Animal Lymph.—Frölich⁹ reviews the literature and reports the case of a boy $6\frac{1}{2}$ years old, of good family and personal history, who developed an acute nephritis within eleven days after being vaccinated. There was edema, and diminished urine containing albumin, red and white blood cells, and hyaline and blood casts. In a month the attack had passed and the boy was quite well; the temperature had never gone above 37.6°C . No other case of nephritis developed under the use of lymph from the same calf from whom this boy had been inoculated.

Ophthalmia Neonatorum.—Sydney Stephenson¹² is of opinion that severe ophthalmia in the newly-born is practically always associated with the micrococci of gonorrhea derived from the maternal passages. Vaginal discharges are common accompaniments of pregnancy, especially among the lower classes. Van Schaick has recently drawn attention to the frequency of gonorrhea in married women, having found gonococci in no less than 26 per cent of 65 married women who complained of gonorrhea. A child traverses the vagina with closed lids, so that morbid secretions could hardly enter the eyes except through tardy labor, application of forceps, or repeated digital examinations on the part of the accoucheur. It is generally admitted, however, that infective material is far more likely to gain entrance to the conjunctival sac shortly after birth, for the discharge clings to the eyelids and lashes, and, as a rule, is carried into the eyes either by the blinking of the baby or by the water and sponges and towels used for the first bath. As a rare event, a child may be born with a fully developed ophthalmia, due probably to rupture of the membranes several days before birth.

Otitis Media in Nurslings, and its Consequences.—Steiner¹³ has studied the material at the children's clinic in Breslau, and divides the cases into four groups: (a) fairly well nourished or slightly dyspeptic infants who acquire otitis media; (b) infants who develop otitis in the course of a severe gastro-enteritis which is cured; (c) those in whom the gastro-enteritis is not cured but becomes chronic; (d) those in whom meningitis develops by way of the ear infection. His conclusions are: that otitis may begin with such mild symptoms as to be overlooked, or else with moderately severe general disturbances; that chronic gastro-enteritis and its resulting atrophy are not due to otitis media, but that the otitis forms a frequent complication of this disease; that otitis media demands serious consideration in infants, because it may cause

suppurative meningitis or become chronic and later spread so as to involve the cranial bones or the brain.

Pemphigus in the Newly-Born; Cold as an Etiological Influence.—Kirchner¹⁴ reports a case in a baby 8 days old, in whom the bullous eruption appeared in a perfectly symmetrical manner on the thighs and neck, spreading to legs, soles, arms, lips, and back. No bacteria could be demonstrated in the clear fluid contents of the vesicles. There was no history of syphilis nor of any source of infection. From the symmetrical distribution of the eruption and its method of spreading along the course of certain nerves, the process seemed to be a trophoneurosis due to exposure to cold. The child had been very thinly clad in a cool room since birth and bathed at 28° R.

Peritonitis, Chronic Serous.—Filatoff¹ maintains that such a condition as chronic, simple, serous peritonitis exists and that it can be diagnosed during life. Its course is very different from that of tuberculous peritonitis, in that it almost invariably ends in complete recovery after remaining stationary for two or three months. The tuberculous cases, on the contrary, tend to involve the entire organism and lead to a fatal termination in six to twelve months when not treated. By way of therapy, complete rest in bed, regulation of the diet and of the bowel action are sufficient, with the use of the trocar to evacuate fluid if it become excessive. Finally, should the fluid recur continually, laparotomy is indicated, but is by no means always successful. This fact is illustrated by the reported case, which was that of a boy of 4 years and 8 months of age, whom no form of treatment benefited permanently. Laparotomy was done, but the fluid accumulated again. The general condition remained good after nine months' duration of the disease. At the operation the fact that any tuberculous lesion existed was positively excluded. As to the etiology of chronic serous peritonitis, an acute infectious disease (typhoid, measles) or taking cold usually precedes the onset of the ascites.

Pertussis, Bacteriological Examination of.—Zusch¹⁶ examined 25 cases by means of cover-glass preparations from the sputum and cultures from the same, finding the short bacillus described by Czaplewsky. Six cases were well observed clinically, and it was noted that the bacilli were most numerous and easy of cultivation while the symptoms were simply those of pertussis. With the onset of a bronchitis other bacteria, chiefly cocci, appeared. In one case the development and cure of a broncho-pneumonia was followed by the cessation of paroxysmal cough and the disappearance of the bacilli from the sputum. The exact significance of this apparent influence of the pneumonic bacterium upon the pertussis bacillus must remain problematical at present. In two cases the clinical diagnosis was made positive at an early stage by finding the bacilli in the sputum.

Pertussis, Treatment of.—Louis Fischer¹⁶ divides the disease into three distinct stages, each stage requiring its own particular treatment. The first is known as the catarrhal

stage, and the treatment consists of the ordinary expectoration remedies, chiefly belladonna, benzoate of sodium, quinine, and minimal doses of codeine. The following may be administered:

℞ Codeine.....	gr. $\frac{1}{60}$.
Pulverized extract hyoscyamin.....	" $\frac{1}{2}$.
Saccharine albi.....	" x.

M. f. Pulves dent tales doses No. 12.

Sig. One powder every three hours for a child 1 year old, with a spoon of sterilized water.

If the cough does not subside and the typical whoop appears, or if the history of the case shows that the child coughs more frequently at night, flushes in the face, and that the cough is spasmodic in character, or if the child gets an attack of nose-bleeding or blood-spitting during a fit of coughing, even though the typical cough is not present, the diagnosis can be pretty plainly made. This is more especially true if we know that the child has frequent intermissions of rest and that the cough comes in typical spasms, and if we find that the temperature is not elevated. In this stage of the disease, which is usually the second stage, it is advisable to give specific treatment, and here is where the value of bromoform is usually attended with success. The following doses seem to prove most adaptable: For a child 1 year old, one drop three times a day for two days, and then give one drop four times a day. If the cough is not lessened and the spasms much milder than before, after four or five days' treatment, the author usually gives two drops three times a day and two extra drops during the night. For a child 2 years old he commences with two drops three times a day, and increases in the same proportion, giving one drop more every second or third day to each dose. For a child 5 years old give five drops three times a day, and gradually increase one drop to each dose every second or third day. The author has found that after the fourth or fifth day there is a decided benefit, proved by the milder form of cough and by a lesser frequency of the spasmodic attacks. The drug does not alleviate any pulmonary complications. The author uses the imported bromoform only. There are some cases in which bromoform fails; at such times belladonna ointment rubbed over the chest two or three times a day, combined with an internal dose until the characteristic belladonna flush is produced, is advisable. Even belladonna fails at times, and then quinine or antipyrin may do some good. A one-per-cent formalin vapor in addition to the bromoform will prove effective. Non-irritating diet, the avoidance of alcoholic drinks, salt-water baths followed by friction with a rough Turkish towel, and fresh air, are valuable aids. In the third stage, or stage of decline, indications for treatment are met in the usual way.

Pleurisy, Hemorrhagic, in Childhood.—Lewin² found four cases with hemorrhagic fluid among 50 cases of exudative pleurisy. In none was there any evidence of syphilis, tuberculosis, sarcoma, or carcinoma, nor did any infectious disease precede the pleurisy. Heart disease and the hemorrhagic diath-

esis were also absent, and at no time during the observations was there albumin present in the urine. In age these cases varied from 11 months to 5 years, and three recovered; the fourth disappeared from view. The only possible etiological explanation of these cases lies in the assumption that they may have followed an attack of influenza, the catarrhal form of which it is difficult to diagnose with positiveness in children.

Rubeola, Polymorphous Forms and Differential Diagnosis.—Toplitz¹ has studied a recent rubeola epidemic in Gratz, and finds that the incubation period oftener passes without symptoms than the corresponding period of measles; the stage of the exanthem may last only a few hours or two days, and catarrhal symptoms may then occur. The glandular swellings are less marked than in measles. The eruption may be divided into the large and small spotted varieties, the former resembling measles, the latter scarlet fever. The irregular and rapid spreading of the eruption, together with its short duration (two to four days), are differential points in diagnosis. Desquamation is rare; a mild pigmentation sometimes remains for a week or two.

Retropharyngeal Abscess.—F. Huber¹⁷ has devised a pair of dressing forceps, a safe and efficient instrument to employ in opening the acute abscesses of the larynx. The jagged wound left does not bleed very much, nor is there a tendency to rapid closure of the opening. In these respects the forceps is preferable to the knife. If the abscess is very large and tense, it is advisable to introduce a grooved director, allowing some pus to escape slowly and thereby relieve the tension and avoid the danger of any getting into the larynx. The forceps is then employed as before. If the infection producing a retropharyngeal abscess arises in the pharyngeal mucous membrane, the process usually runs its course without involving the superficial cervical glands. In quite a proportion of cases of cervical adenitis at the angle of the jaw, suppuration of the deeper lymphatics occurs, and we may have as a complication a lateral pharyngeal abscess. Such cases are apt to be overlooked, the difficulty in swallowing and breathing being attributed to the swelling attending the suppurative inflammation in the superficial glands.

Serum Therapy and Death in Diphtheria.—Kassowitz¹⁸ does not accept the Klebs-Löffler bacillus as the true cause of diphtheria in man, nor does he believe that the bacillus is pathogenic for man. Consequently he does not find the use of antitoxic serum justifiable or valuable.

Stricture of Esophagus following Diphtheria.—Rosenheim¹⁹ reports a cured case in a boy of 5 years. The stricture occurred at the age of 3 and necessitated gastrotomy and feeding through the fistula. The stricture was found opposite the second dorsal vertebra and did not permit the passage of a sound. By careful dilatation with a probe, which swelled *in situ*, the child was able to take fluid nourishment for the first time in two years. Slow dilatation by means of the water-

filled balloon completed the cure and the boy can now eat anything.

Stuttering.—Liebmann²⁰ maintains that stuttering consists in a rushing together of the consonants, and consequently his method of treatment has for its object the teaching of the relative significance of the vowel and consonant sounds. The patient is made to speak sentences with prolonged vowels and short consonants, so that even at the first lesson many sentences are spoken easily and fluently. The psychic effect is soon apparent, the patient regaining confidence in his ability to speak plainly, and the result is excellent in a very short time. This method can also be employed with young children. Stuttering may be caused by the infectious diseases, injury to the head, imitation of other children, or by heredity. Its more frequent occurrence in males than in females is to be explained by the greater motility of all the voluntary muscles in women than in men, the tongue included.

Testicle, Tuberculosis of and Affections of, in Childhood.—M. Phocas²⁶ gives the clinical history of a child of 2½ years upon whom an operation was performed for a tumor of the testicle. In adults, he observes, diseases of the testicle are more easily diagnosed: tuberculosis in adults is usually localized at the epididymus, syphilis gives certain characteristic forms to the organ, malignant neoplasms transform testicle and epididymus into a large, irregular mass of unequal consistence, so that the only disease likely to be confounded with them is hematocele. All of these affections may occur in childhood, but they possess certain characteristics, due to the fact that the organ is undeveloped. *Tuberculosis* of the testicle in childhood has been known since the days of Lloyd in 1821, and has been the subject of study among more recent scientists. It is frequently found under the age of 5 years, and not so often at puberty. Heredity does not appear to be the rule. The disease is almost always unilateral, the left side being the one most frequently affected. It may be primary or accompanied by other local manifestations of the malady. In form the disease may be acute or chronic. It is very frequently benignant, retraction and atrophy of the testicle being the usual termination. Yet out of nine cases reported by Huttenil six died. *Syphilis* of the testicle in childhood is well known. It is found chiefly in newly born or in prematurely-born infants, and is quite exceptional in older children. It is accompanied by syphilis of the skin or of other organs. It is usually bilateral. The testicle is swollen, hard, heavy, and not painful to the touch. Specific treatment arrests the disease and prevents atrophy. *Malignant neoplasms*, while less frequent than tuberculosis or syphilis, are of more frequent occurrence than in adults. According to Monod, the new growths appear usually in the first year of life, in the first six months, and may even date from birth. Death occurs within a year. Castration, no matter how promptly performed, does not seem to prevent the advance of

the disease. *Teratomata* may occur in childhood, and are of difficult diagnosis.

The question of treatment of tuberculosis of the testicle in children is a disputed point. Baginsky states that castration is often followed by a cure; Buisson declares that he knows of no case in which an operation would be justified; and Jullien recommends expectant treatment and antiseptis. The author believes that an operation should be performed whenever the testicle is affected *in toto* or when it is a source of infection for the body.

Tuberculous Glands of the Neck.—Ernest Laplace²⁷ remarks that our modern views of infection of any kind point to the necessity of destroying foci of infection, and leads us to the conclusion that the tuberculous glands should be removed at as early a date as possible, provided they have not shown a tendency to subside under the ordinary treatment. Cures have been effected by the injection of an emulsion of iodoform in glycerin or a solution of iodoform and ether, but such instances are rare, and the processes are not free from danger, especially in the case of the deeper glands. At best, even if the process of tuberculosis stopped, a fibrous mass would be the result, retaining in a measure the appearance of a fibrous growth and constituting at any time a perfect cure. The author has always advocated the complete dissection and removal of these tuberculous glands, believing that the sooner such foci of disease are removed the better. The patient can convalesce and regain health under the influence of general tonic and hygienic treatment. The conditions likely to be mistaken for tuberculous adenitis would be malignant lymphoma, known as Hodgkin's disease. In this condition there is a general enlargement of the glands around the neck, and possibly in other portions of the body also, for it is a local manifestation of a pseudo-leukemia. Tuberculous adenitis should be differentiated from a lympho-sarcoma and secondary metastatic lymphoma, both of which are malignant and can be recognized as such from the rapidity of their development and invasion of surrounding tissues. Syphilis also manifests itself in the glands of the neck, but the process is slow and would involve a greater number of glands of both sides at the same time. Tuberculous glands, on the contrary, are likely to be limited in number, although they sometimes appear on both sides of the neck simultaneously. The growth is rather slow, but as it develops it appears more and more fixed. It is not necessarily accompanied by great pallor, nor does it give rise to much pain.

Urea Excretion, Influence of Ammonium Salts upon.—Keller⁹ made a number of observations upon infants suffering from chronic gastro-intestinal disease, and found that such children have lost none of their power of converting ammonium salts into urea. This gives an added support to the view that the increased ammonia excretion in the urine of infants

with gastro-intestinal disease is due to an increase in the formation and excretion of acid metabolic products.

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ITEM.

THE FIRST NATHAN LEWIS HATFIELD PRIZE FOR ORIGINAL RESEARCH IN MEDICINE.

THE College of Physicians of Philadelphia announces through its committee that the sum of five hundred dollars will be awarded to the author of the best essay in competition for the above prize. Subject: "A Pathological and Clinical Study of the Thymus Gland and its Relations." Essays must be submitted on or before January 1, 1900. Each essay must be typewritten, designated by a motto or device, and accompanied by a sealed envelope bearing the same motto of device and containing the name and address of the author. No envelope will be opened except that which accompanies the successful essay. The committee will return the unsuccessful essays if reclaimed by their respective writers or their agents within one year. The committee reserve the right not to make an award if no essay submitted is considered worthy of the prize. The treatment of the subject must, in accordance with the conditions of the Trust, embody original observations or researches or original deductions. The competition shall be open to members of the medical profession and men of science in the United States. The original of the successful essay shall become the property of the College of Physicians. The trustees shall have full control of the publication of the memorial essay. It shall be published in the Transactions of the College, and also, when expedient, as a separate issue.

Address J. C. WILSON, M.D., Chairman, College of Physicians, 219 South Thirteenth street, Philadelphia, Pa.

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ORIGINAL COMMUNICATIONS.

CARCINOMA DEVELOPED FROM THE WALL OF A DERMOID
CYST OF THE OVARY.

BY

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[From the Pathological-Anatomical Institute of Prof. Chiari in Prague.]

NOTWITHSTANDING the remarkable activity of late years in the field of operative gynecology and in the study of the pathological conditions of the female generative organs, only eight cases, excluding the accompanying one, of carcinoma of dermoid cysts arising from the epidermal layer of the cyst have been reported. Of these cases six are certainly true examples of this type; the other two, that of Heschl¹ and of E. v. Wahl,² can only be accepted provisionally, for the incompleteness of the microscopical descriptions accompanying them renders it impossible to say whether the cancer was a direct derivative of the derma or only a coincident combination with the cyst.

CARCINOMA OF THE GLANDULAR TYPE.

Until quite recently epidermal carcinomata have been the exclusive type, at least of the well-described cases, reported; to

this list, however, Yamagiva,⁷ professor of pathology in the Royal University at Tokio, has added an extremely interesting and unique example of carcinoma of the glandular type associated with a teratoma of the ovary, which, as he truly says, is yet a unicum. The case was that of a 63-year-old woman who had died from the effects of an abdominal tumor which reached to a point above the umbilicus. It was extensively adherent and was associated with metastatic growths in the retroperitoneal, mesenteric, and right supraclavicular glands. The wall was in general thin (two to three millimetres), except in one area where it reached a thickness of five to six centimetres, and was of a cartilaginous to bone-like hardness.

The tumor consisted of one chief cyst, containing 5,000 cubic centimetres of fluid, which made up two-thirds of the mass. The inner surface of the tumor was mostly of a smooth, grayish blue color, and contained many fenestra communicating with small neighboring cysts. At one point the surface was covered with a whitish, pale, cloudy layer, divided into many fields, and giving it a scaly or squamous appearance, to which the hard, cartilaginous portion of the cyst wall presented a sharp contrast. In the middle line of the cartilaginous area, presenting toward the cyst cavity, there was a bony prominence; in another part a brownish, mulberry, warty elevation, and in others papillary or warty excrescences of hard consistence; and, finally, at one spot on the wall, a relatively soft nipple about two and one-half centimetres in diameter.

As the result of a most painstaking and exhaustive examination, Yamagiva states that the tumor was a teratoma consisting of solid mixed tissues and of cysts partly dermoid, partly follicular, and partly cysto-adenomatous associated with cancer of the glandular type. In seeking the origin of the new growth he came to the conclusion, after a very logical analysis of his case, that the nipple-like growth or anomalous misplaced mammary gland on the inner surface of the large dermoid cyst was most likely the primary seat. While, as he admits, his hypothesis cannot be proved positively, yet one must conclude, after reading his careful description and conclusions, that at least it bears the stamp of very strong probability. This case, therefore, marks an epoch in the history of dermoid cysts and must be assigned a new place in their classification. There still remains, however, a niche to be filled, for as yet no instance of carcinoma of the glandular type arising from the special glands of the skin lining these cysts has been reported.

CARCINOMA OF THE EPITHELIAL TYPE.

Until the publication of Bierman's case³ in 1885 from Chiari's laboratory no well-authenticated case, even of epidermal cancer, had been reported, for, as stated above, the cases of Heschl and Von Wahl do not admit of a definite classification. Bierman's case is most minutely and carefully described, and leaves no doubt as to its being a carcinoma arising from the epidermal lining of the cyst cavity, and to him therefore belongs the credit of having recorded the first unquestionable case of this type.

Briefly summarized, the chief points in his report were the following: The case was that of a young woman, 21 years of age, who had died from the effects of a rapidly growing abdominal tumor. At autopsy the tumor was found to be four times the size of a man's head, involving primarily the right ovary and secondarily the left ovary, the under surface of the diaphragm, the liver, and retroperitoneal glands. It was composed of two parts—one, consisting of cystic spaces the size of a pea and larger, filled with a mushy, fatty mass included between broad bands of connective tissue, while the other was denser and of a more homogeneous consistence. Both parts contained islands of cartilage and, in the more open portions of the tumor, spiculæ of bone.

On microscopical examination of the loculated portions the cystic spaces were found to be lined with one layer of cubical and cylindrical epithelium resting upon a membrana propria, and this in turn was surrounded by loose connective tissue. In some places narrow tubes lined with cylindrical epithelium were found, which Bierman took for sweat glands. In a few larger cysts, lined by epithelium, a well-defined carcinomatous change was observed, the epithelium forming typical projections into the underlying tissue. Besides these spaces, dermal glands, with here and there islands of bone and cartilage, were present. Most important of all, however, for the establishment of a diagnosis were the rich epitheliomatous growth which penetrated the tissues, forming exquisite cancer processes (*Krebszapfen*), and large numbers of pearly bodies. The denser portion showed a still more extensive new growth consisting almost exclusively of carcinoma.

In view of the fact that the carcinoma presented all of the typical features of an epidermal carcinoma and that there were present the normal elements of the skin and its glands, and,

finally, that the cancerous processes were seen penetrating into the deeper tissues directly from the epithelial lining of the cyst, Bierman concluded that the latter was the point of origin.

Himmelfarb (1886) ⁴ reported the case of a woman, 55 years old, who had died from the effects of a dermoid cyst associated with cancer, which is analogous to the foregoing one.

The next case was that of Krukenberg (1887), ⁵ which presented an interesting variation, in that it was not so far advanced and therefore showed the earlier stages of the cancerous degeneration. The tumor was as large as a child's head and consisted of two dermoid cysts, one the size of a walnut, the other the size of a fist. In the larger cyst numerous somewhat prominent epithelial islands were scattered over the inner wall, which were undergoing carcinomatous change. The cyst wall varied from two millimetres to three centimetres in thickness, the thicker portions being the points of greatest carcinomatous involvement. In a few places the cancer had entirely penetrated the wall and was exposed upon the outer surface. Metastases had taken place to the omentum, and several immovable nodules were found deep in the pelvis which appeared to be formed by the right ovary. In this case the epidermal islands had undergone carcinomatous degeneration, some of which were only in the beginning stage while others were more advanced. The process had developed as a typical epidermal carcinoma, had then penetrated between and pushed asunder the fibrous lamellæ of the cyst wall, and in a few places had reached the surface, from whence metastases had occurred into Douglas' pouch and into the omentum. The small cyst was only involved secondarily by invasion from a cancerous island of the larger cyst.

Tauffer (1895) ⁶ followed Krukenberg with the full report of a case in which he was able to demonstrate most clearly the direct transition of the surface epithelium of the cyst into carcinomatous tissue, from whence it had involved extensively the cyst wall and then given metastases to the iliac and retroperitoneal glands. This writer collected all of the cases up to that time, either giving their reports *in toto* or a very full abstract of them; and, including his own and the two questionable ones (Heschl's and Von Wahl's), only six all together had been recorded.

Since then Thumim (1897) ⁶ has reported a case from Landau's clinic which corresponds almost fully to Krukenberg's case.

Yamagiva ⁷ has also published, in addition to the teratoma referred to on previous pages, a second case of cancer arising

from the epithelial layer of a simple dermoid cyst analogous to Bierman's case. Besides these I find references to cases reported by Oliver,¹¹ Pottion,¹² Thornton,¹³ Morrison,¹⁰ and Shoemaker,⁹ the original articles of which are not accessible to me.

With this brief summary of the foregoing literature, I turn to the description of a new case, for the privilege of reporting which I am indebted to Prof. Chiari, who has kindly placed it at my disposal for study.

DESCRIPTION OF NEW CASE.

Unfortunately the history of the case is very incomplete, the following brief note being all that accompanied the specimen to the Pathological Institute:

Museum specimen No. 4123. The tumor was extirpated by abdominal section from a woman 29 years old by the late Prof. Breisky, May 29, 1885. At the same operation a metastatic nodule the size of a walnut was removed from the left axilla. The patient made a good recovery from the operation. Her subsequent history is not known.

MACROSCOPIC DESCRIPTION OF SPECIMEN.—Combined cystic and solid tumor of the left ovary the size of a new-born child's head (15x9x8 centimetres). The tumor preserves the general outlines of the ovary, the inner pole being occupied by the solid, the outer by the cystic tumor. On one surface a portion of the Fallopian tube $2\frac{1}{2}$ centimetres long remains attached by its mesosalpinx to the tumor. The fimbriæ are normal and when spread out measure 2 centimetres in width. The lumen of the tube is patulous. At the point of amputation are a number of large, patulous vessels which hold the same relationship to the tumor as that of the branches of the ovarian vessels to the normal ovary. The solid tumor is 8x7x3 $\frac{1}{2}$ centimetres in size, is irregular in shape, and its external surface presents a rough, granular appearance, with short, tag-like bits of tissue representing the points of adhesions between the tumor and the neighboring organs. The consistence of the tumor is hard, resistant, and on section with the razor shows a uniform grisly, white appearance, with fine, indistinct fibrillary lines interlacing through its substance. It presents at no point excrescences or papillary projections, and appears to lie within the cyst wall, for one finds at the points where the latter merges into the tumor an apparent splitting of its layers, one continuing as the inner limits of the tumor, the other rising rather abruptly upon the tumor, in the substance of which it is quickly lost.

The cyst measures 11x8x8 centimetres. Its wall is wrinkled, of a dead-white color (alcoholic preparation), with here and there on its external surface faintly dotted brownish areas produced by interstitial extravasations of blood. The interior is mostly clad with wrinkled epidermis which presents the typical appearance of the washerwoman's skin.

Although now a monolocular, the cyst has evidently consisted originally of two or more cavities, for in one hemisphere there is a ribbon-like semilunar bridge of tissue, 2 centimetres in width, representing the remains of a septum. In those areas where the cyst wall has the most characteristic epidermal appearance there is a sparsely scattered growth of short black hairs. At one point there is a small, isolated, wart-like projection covered with hairs. In the anterior wall of the cyst is an irregular bluish area 2x3 centimetres, produced by an interstitial hemorrhage, and branching out from this are a few large, dilated vessels which stand out as corded ridges above the surface. Nowhere are teeth, bony or cartilaginous structures to be found. The wall is everywhere thin beyond the limits of the solid tumor, averaging about 0.5 centimetre thick, and with the dissecting needle may easily be divided into two to three thin lamellæ.

The circumscribed nodule removed from the axilla is 2x1.6 centimetres in size, is of ovoidal shape, and is limited on one surface by the thick axillary skin and subcutaneous fat. On section with the razor the nodule presents the same gross appearance as the solid portion of the ovarian tumor.

Sections for microscopic examination were made from the following portions of the tumor and cyst wall: (a) epidermal area; (b) ecchymotic area; (c) warty growth; (d) bridge of tissue representing previous septum; (e) junction of cyst wall with tumor; (f) centre of tumor; (g) metastases in axillary gland. Sections, 10 μ thick, stained by Van Gieson's method.

MICROSCOPIC EXAMINATION.—(a) *Epidermal area.* At this point the cyst is 0.2 centimetre thick and is clad with epidermis composed of the usual number of layers: first, a deeply staining stratum of cornified epithelium, then six to eight layers of flat followed by one layer of cylindrical cells, which set upon a fibrous tissue basis. Throughout the entire length of the section the epithelium is closely confined to its normal limits and shows no tendency to penetrate the underlying tissues. Papillæ, a few sebaceous glands and hairs are present.

A recent hemorrhage has occurred into the connective tissue

immediately beneath the epidermis, pushing its fibres apart and filling a considerable space with blood in which the red corpuscles are still well preserved. External to this is a layer of loose, vascular connective tissue whose component cells are comparatively rich in protoplasm and contain plump, well-stained, spindle-shaped nuclei. Occupying the external border of the section is a narrow zone of connective-tissue fibres poor in protoplasm, densely packed together, and in general presenting a picture like that of the fibrous covering of the ovary.

(b) *Ecchymotic area.* The sections from this part correspond in appearance to the foregoing, with the one exception that the interstitial hemorrhage is more extensive and of older origin.

(c) *Warty growth.* This growth forms a cone-shaped elevation 0.5 centimetre high and is clad with numerous short hairs. A typical papillary arrangement is noted here, and profusely scattered throughout the layer are exquisite examples of sebaceous glands and hair follicles, but no sweat glands. The epithelium is normal in its distribution and shows no tendency to penetrate the underlying tissues.

(d) *Bridge of tissue representing a previous septum.* Sections from this point offer nothing specially noteworthy, being composed simply of a central stratum of connective tissue clad on both sides with three to five layers of flat and cylindrical epithelium.

(e) *Junction of the cyst wall with the tumor.* Sections from this area show the normal epidermis approaching the tumor in wave-like folds. The cyst wall beneath the epidermis is composed of concentric connective-tissue fibres rich in blood vessels, external to which is the denser zone noted above. Approaching the cancerous area the epithelium gradually shades off into a thick layer composed of massive giant cells situated around short hairs, among which leucocytes and small round cells are abundantly interspersed. On the border of this layer, next to the connective tissue, is a marked reactionary inflammatory zone composed of round cells and leucocytes. This surface of the cyst presents a picture strikingly analogous to that seen in granulating wounds. As the limit of the section has fallen just outside of the new growth, no cancer cells are seen. Sections from other points at the junction of the cyst wall with the tumor, however, show most beautifully the transition of the cells of the epithelial layer into cancerous tissue.

The regular layers are no longer preserved, the cells being heaped up in a confused mass, and are all of the large, flat variety with large oval nuclei and deeply staining protoplasm.

In the tissues beneath the point where the atypical appearance is first noted there is an inflammatory reaction. Approaching the main body of the new growth, the epithelium loses all semblance to an orderly arrangement and begins to encroach upon the underlying tissue, in some places forming well-marked cancerous projections with here and there a pearly body, and still further toward the centre the fibrous tissue of the cyst wall becomes more and more involved, until it is finally almost entirely replaced by the cancerous process. Although the pearly bodies are not so abundant as described, for instance, in Bierman's case, a considerable number of unmistakable examples are seen, in addition to which at many points the epithelium assumes a more or less concentric laminated arrangement which strongly suggests them. The epithelial cells are enclosed in large oval or round connective-tissue alveoli, in which they are closely packed together, one against the other. This arrangement is especially noted in the border lines of the tumor. Along the margins of the tumor the cells are regular in outline, their nuclei are well preserved, and the cell protoplasm stains deeply, whereas in the more centrally located portions the cells stain poorly, their nuclei having either disappeared or degenerated into a granular detritus. Occasionally a blood vessel is seen whose lumen is completely blocked with cancer cells, while its neighboring vessels are patulous and appear normal.

(f) *Centre of tumor.* The sections from this portion show an extensive necrosis, the epithelial cells having undergone complete destruction, while the connective tissue forming the alveoli is in an advanced stage of hyaline change. The cancerous process has extended directly through from the inner lining to the outer limits of the cyst wall, and in some places the necrotic cancer cells lie scattered upon the surface.

(g) *Metastatic nodule in axilla.* This nodule represents the same type of cancer as above described. The connective tissue is more abundant, and the alveoli are smaller and crowded more closely with epithelium, which present all the appearances of vigorous, actively proliferating cells. Numerous typical epithelial pearls are seen. The nodule is well limited to the glandular structure and does not appear to involve the skin or subcutaneous tissues.

Diagnosis: Dermoid cyst associated with carcinoma originating in the epithelial linings of the cyst.

CONCLUDING NOTE.

The point of paramount value in determining the origin of the cancer in this case is that we are able to directly trace the epithelial layers from the point at which they present a normal arrangement to the border lines of the tumor where the transition into carcinomatous tissue is observed. *Upon this fact, therefore, we base the diagnosis of carcinoma of the cyst wall arising from the epidermal lining.*

An especially interesting point in this case is the surrounding of the hairs with granulation tissue containing many giant cells, noted at the junction of the cyst wall with the cancer. This is probably a secondary process, which may be due either to the destruction of the hair follicle by the new growth, or, according to the extremely interesting observations of Hildebrandt,¹⁴ may be the result of irritation produced by hairs shed from the cyst wall and implanted upon other areas, as a result of which granulation tissue and foreign body giant cells have been formed.

A few words in conclusion as to the clinical aspect and routes of metastases in these cases. It goes without saying that a diagnosis of the earlier stages of carcinomatous degeneration of dermoid cysts before operation is impossible, for in none of the cases so far reported have there been any signs or symptoms noted which can in any sense be taken as peculiar to this complication.

After the cancer has extended so far as to involve or penetrate the wall of the cyst, forming hard, cartilaginous-like plates which may be palpated on the surface, or has given rise to palpable metastatic nodules in neighboring organs, associated with pain and general failure in health, a provisional diagnosis may be made. Unfortunately it is then too late to operate with any great assurance of relieving the patient. With the records of the cases thus far operated upon before us, we may say with little doubt that not a single one has been cured—a result which further points with great emphasis to the necessity of the early removal of all glandular and dermoid cystic tumors of the ovary before this complication arises. In Thumim's case, for instance, the dangers of delay in operating are well illustrated. The patient had consulted Sir Spencer Wells and an eminent German gynecologist sixteen years before with regard to her tumor, to which an attack of peritonitis from which she had suffered had already been ascribed, but they advised against operation because it was thought to

be an interstitial myoma. The subsequent growth of the tumor was gradual, and with proper care on the part of the patient the inconveniences and pain caused by it were bearable. Eight months before her admission to Landau's clinic she had suddenly experienced intense pain in the left side, which caused her again to consult Sir Spencer Wells, who still advised against operation on account of the extensive adhesions. As the patient continued to suffer, she consulted Landau, who removed the cyst and a portion of the abdominal wall involved by the carcinoma; but although the immediate recovery from the operation was satisfactory, the malignant process continued to extend, causing death six months later.

The age at which this complication is most likely to occur appears to follow the same general law of cancer in other regions, developing by preference in women approaching or beyond the menopause. The ages of the cases so far reported are 63, 55, 48, 45, 43, 43, 41, 29, 26, and 21 years.

As to the question of metastases in these cases, besides the retroperitoneal blood and lymphatic channels leading from the pelvic organs, another frequent route for transmission of the cancerous particles appears to be the fluid currents of the peritoneal cavity, through which secondary growths become engrafted upon the peritoneal surfaces more or less remotely situated from the tumor.

When the cancer has penetrated the cyst wall and presents an exposed surface within the peritoneal cavity, neighboring organs may be involved by direct contiguity of surfaces, as seen in Thumim's case, where the anterior abdominal wall was the secondary seat of the new growth. The omentum, through adhesions to the tumor, may in the same way become affected, or by indirect metastasis where it remains free, as illustrated in Krukenberg's case.

In other cases the epithelial cells may be wafted to more remote parts of the peritoneal cavity and give rise to metastatic growths upon the liver and under surface of the diaphragm, as seen in Bierman's case.

In this connection Muscatello's experimental work on dogs is called to mind, in which he showed quite conclusively that minute foreign particles, such as carmine granules, introduced into the peritoneal cavity, would invariably be swept, even against the force of gravity, toward the diaphragm, through which they gained access to the lymph channels and thence into the blood currents, by which they were deposited in the various lymph glands.

In seeking an explanation for the metastatic deposit in the axillary lymph gland of our case, it does not, however, appear probable that it occurred in the last-described way, because no secondary growths upon the peritoneum were noticed during the operation. For this reason, notwithstanding the fact that the tumor had penetrated the wall of the cyst, it is more likely that the metastasis occurred through the blood currents. That the axillary gland was the only seat of metastasis is hardly probable. Concerning this point, however, it is not possible to draw more definite conclusions on account of the absence of full details in the history of the case.

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A CONTRIBUTION TO OUR KNOWLEDGE OF CHRONIC INFLAMMATORY HYPERPLASIAS OF THE VULVA.¹

BY

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THERE have been described by a number of writers under various names, such as l'esthiomène, lupus, ulcus rodens vulvæ, chronic elephantiac ulcers, destructive ulceration, and ulcus vulvæ, a certain disease sometimes appearing as a chronic inflammatory hyperplasia, at other times as a chronic

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ulcerative or destructive lesion, of the vulva, the etiology of which still remains undetermined. Neither from the previous history of the patient, the clinical course of the disease, nor the macroscopical or microscopical characteristics of the lesions has any observer been able to satisfactorily conclude a classification. The disease is best described by Veit¹ under the name of *ulcus rodens vulvæ*, not indicating, as in this country, a form of carcinoma, but an undetermined ulcerative or hypertrophic and ulcerative disease, as first suggested by Virchow. The reason the etiology has not been determined is probably in part due to the fact that the disease is extremely rare and thus not sufficiently studied, and partly also to the fact that the microscopical changes are simply those of chronic inflammation, with few modifications, none of which allow the investigator to at all clearly or definitely separate the lesion as a specific granuloma or other form of venereal disease or a known skin disease.

The disease may be briefly described as an excessively chronic, at first small, circumscribed, hard, and edematous inflammatory hyperplasia, or an ulcer appearing without apparent cause in women who are often otherwise healthy, upon various portions of the vulva, particularly in relation with the urethra, the perineum and fossa navicularis, and the cutaneous and mucous surfaces of the labia majora. The lesion may appear and disappear for a time and then become persistent, continuing, slowly increasing in size, perhaps for many years, until finally the patient dies from exhaustion or, through the resultant poor health, she dies of an intercurrent disease, usually peritonitis or phthisis. The growth is painless; the patient complains of no discomfort; its presence is usually discovered only by accident. Local treatment results in little or no improvement; excision and cauterization is apt to be followed by a return of the disease within a few weeks. The hypertrophic or hyperplastic form is usually associated more or less with the ulcerative form. The patient is usually of the poorer class, uncleanly in her habits, and very often a prostitute. Infection and trauma are thought to be predisposing causes. Koch² has described 10 cases of his own and 10 other cases taken from the clinic of Neisser, under the name of *ulcus vulvæ*, in most of which the inguinal glands had been extirpated because of bubo. He believes that the stasis in the lymphatics of the vulva produced by the removal of these glands explains the elephantiac hyperplasia. This, however, has not been the experience of other observers. Huguier³ in

1849 reported 9 cases of destructive and hypertrophic ulceration of the vulva under the name of l'esthiomène—essentially a lupus—and this name is still employed by the French to designate such a disease. Taylor,⁴ of New York, however, believes these cases of Huguier were those of old syphilis, that their etiology was wholly unexplored. Pozzi⁵ states that the lesions differ from those of carcinoma; they have not the characteristic destructive peculiarities of carcinoma, but resemble those of lupus of the face. He believes the disease to be lupus. Koch² believes l'esthiomène is identical with *ulcus vulvæ*. Peckham⁶ collected 60 cases from the literature, of which 32 were of the ulcerative form. Twelve were determined to be syphilitic and 14 others were probably syphilitic. He characterizes the disease by its slow progress, absence of pain, marked local changes, thickening, ulceration, and hardness. The microscopical changes were negative. It was concluded not to be carcinoma. There were no caseation, no giant cells, but simple inflammatory changes. Haeberlin⁷ described a case as hypertrophic and perforating lupus of the vulva. There was in the inguinal region a scar from which an inguinal gland had been removed. No tubercle bacilli were found. From his description of the case others have concluded that the disease was one of syphilitic granulation growth. Landau⁸ published a case as chronic ulceration of the vulva in which tuberculosis, carcinoma, and syphilis were excluded. He was unable to determine the etiology of the disease. Dechamps⁹ saw in a woman having general tuberculosis a destruction of the entire left labium by a tubercular ulcer. Microscopical examination showed miliary tubercles; inoculation also gave a positive result. He considers, apparently for this reason, that both terms, l'esthiomène and lupus, are incorrect, believing such lesions are either tuberculous, carcinoma, or tertiary syphilis.

Breisky¹⁰ described a case of elephantiac ulcerative growth which he thought was probably a skin tuberculosis. Taylor⁴ states that such cases of vulvar deformity are simple hyperplasia resulting from irritation, inflammation, or traumatism; that chronic chancroid is a cause in a certain number of cases; that some are due to essential and specific syphilitic infiltrations and hyperplasias; and that very rarely are they tubercular. He further states that, should it be determined that tuberculosis and lupus of the skin are wholly identical in their nature and clinical history, we shall then have to admit that there is a lupus of the external genitals. Duncan¹¹ described 4 cases as hemorrhagic lupus, and Macdonald¹² 3 cases of lupus of the vulvo-

vaginal region, but they offer no proof that the disease was lupus. Cayla¹³ found in a woman who had died of phthisis a swelling of the labia with ulceration, also a cloaca between the rectum and vagina which had the microscopical characteristics of lupus.

The microscopical changes, as said, show nothing characteristic of any special disease. Pozzi⁶ describes the tissue as hyperemic, with small foci of small round-cell infiltration which surrounds the small blood vessels. Peckham⁶ and many others have described similar changes. Ruge and others have found the epidermis, also the papilla, considerably thickened; while others describe the epidermis as being normal and disease present only in the corium. Esmarch, Kuhlenkrampf, and Koch found diffuse small round-cell infiltration in a sclerotic and thickened connective tissue—that is, granulation tissue—which sometimes extended to and even into the muscle tissue. They also observed a large number of plasma cells, the nuclei of which were often epithelioid, the plasma of the cells sometimes showing degenerative changes. Pinner states the nuclei are often epithelioid in character and partly developed into typical giant cells. Koch believes these giant cells are simply those described by Ziegler as seen in granulation tissue. Pozzi, Gieson, and Unna have also found giant cells. Pozzi refers to an instance where Martin¹⁴ and Nicolle¹⁴ were said to have found tubercular masses and single tubercle bacilli.

The case described below will serve as an instance of the hyperplastic form of this disease and perhaps assist somewhat in the determination of its etiology. Her history is as follows:

Miss E. B., 20 years of age, single; colored; domestic. Her menstrual period first appeared when she was 15 years of age and was regular and normal until four years ago, at which time she first came under my care. At this time I was called to see her after an illness of many weeks, during which she had been confined to bed. She had lost greatly in flesh and strength, and complained of irregular attacks of pain in the lower abdomen. Her temperature ranged from 100° F. to 102° F. and the pulse from 90 to 120. The abdominal and pelvic cavities were found filled with irregular masses, which were concluded to be due to an advanced tuberculosis of the genital organs and peritoneum. She was sent to the Gyneccean Hospital for operation, but with little hope that she would be relieved. Celiotomy was performed by Prof. Penrose on

March 6, 1894. It was found impossible to enter the abdominal cavity for any distance, the abdomen and pelvis being filled with masses of adherent intestines and characteristic tubercular masses covered with many miliary tubercles. After removing a small portion of the parietal peritoneum the abdomen was closed without drainage. Under stimulating treatment and a nourishing diet the patient slowly improved and was able to leave the hospital at the end of five weeks. The microscopic examination of the parietal peritoneum removed showed undoubted miliary tubercles, many of which contained giant cells.

She spent the following summer in the country and continued to improve in flesh and strength, returning to the city early in the fall. The masses in the abdominal cavity had entirely disappeared, but there still remained distinct tubercular disease of both Fallopian tubes. The menstrual flow had returned and was normal. She complained not a little of a leucorrhœal discharge. She would also now and then have attacks of pain in the right ovarian region, and the limb of this side would occasionally become edematous. Her general health, however, remained good, and she has continually been able to attend to her duties as a domestic. Two years ago she came to me saying that during her menstrual period there appeared on the cutaneous surface of the right labium majus a small growth, which would disappear three or four days after the menstrual period had ceased; that this had occurred for three or four months, and each time it was of larger size and disappeared after a longer length of time. At the time of her visit, two days after the disappearance of the menstrual flow, I found a regular, round, and hard circumscribed hyperplasia in the site described. It was the size of a cent and showed a slight amount of ulceration, but there was practically no discharge from it. The surface was pale yellow in color and composed of a number of minute nodules. It was painless to the touch and gave her no discomfort. I saw her again after two weeks and found that the disease had entirely disappeared. I saw her for the third time two months after her last visit. She stated that the growth had remained between two menstrual periods. It had increased to the size of a five-cent piece, but in other respects had not changed. I was immediately convinced that the growth must be a secondary tubercular infection of the vulva, and advised operation. This she refused,

and I was compelled to give her local treatment. I touched the ulcer with pure nitric acid, and after a few days advised the application of mercury and belladonna ointment.

Thinking of the possibility of syphilis, although I could gain no history of this disease, she was given large doses of potassium iodide, which were continued for three weeks. This treatment was not followed by the slightest improvement or change. I again advised operation, being now more convinced of the tubercular origin of the disease, and she again refused. I did not see her after this until last fall, when she came prepared to have operation. She was admitted to the Gynceean Hospital on October 14, 1897, and the growth and considerable of the surrounding tissue were excised. Up to the present time the growth has not returned. She is perfectly well. The specimen removed was a circumscribed hyperplasia elevated 0.2 centimetre above the surrounding skin, and measured 2.5 and 3 centimetres in its diameters. The surface had not changed, being of a pale-yellow color and formed of minute elevations or nodules very much resembling yellow miliary tubercles. The specimen was immediately hardened in absolute alcohol and prepared for microscopic examination. Microscopic sections were made so as to include every portion of the growth. I was much surprised to find that these sections showed no positive characteristics of tuberculosis, but the following changes: The epidermis was distinctly thickened, and the papilla extended deeply into the underlying tissue. Over the centre of the surface of the epidermis there was a thin film of tissue which failed to take the hematoxylin stain and appeared hyaline. Beneath the epidermis the tissue for the most part showed a diffuse small round-cell infiltration, but here and there, and always surrounding blood vessels, the small round cells were collected in foci; this was particularly the case in the deeper parts of each section. The lymph spaces were much dilated also; the small blood vessels and the endothelium of the blood vessels were somewhat swollen. Here and there, generally distributed through the tissue, were many epithelioid cells, which now and then tended to group and form a giant cell. No typical giant cells were, however, to be seen, nor was there any distinct evidence of the presence of miliary tubercles. About thirty sections were stained for tubercle bacilli by Dr. H. L. Williams and myself, but no bacilli were found.

The history of this case, with the undoubted presence of tuberculosis of the peritoneum and Fallopian tubes, and very

probably also tuberculosis of the endometrium, together with the absence of syphilis and isolation of carcinoma, would lead one to strongly believe, regardless of the indefinite microscopical changes, that the vulvar disease was tubercular in origin; yet the absence of giant-cell tubercles and of caseation, and the failure to find tubercle bacilli, force me to include this case, with many others already described, as an instance of *ulcus rodens vulvæ*. The clinical characteristics we might say were those of lupus, but again the microscopical changes are not sufficient to warrant this belief. True, giant cells have been found in a few such cases, but, as stated, these cells may be seen in granulation tissue and cannot be considered as positive evidence of tuberculosis. Supposed tubercular masses and single tubercle bacilli were found in one instance among a rather large number of cases, but this also is not sufficient to conclude a tubercular origin.

From the history of the patient and clinical course of the lesion, as described in the cases reported in the literature and in the above case, one must naturally at least suspect such a disease to be either tuberculosis, lupus, *ulcus rodens vulvæ*, syphilis, elephantiasis, or epithelioma. There is little doubt that many of the cases reported have been syphilis or epithelioma.

True tuberculosis of the vulva has up to the present time only been seen as an ulcerative process, and it is an extremely rare disease. Cases have been reported by Dechamps,⁹ Chiari,¹⁵ Demme,¹⁶ Zweigbaum,¹⁷ Campana,¹⁸ Viatte,¹⁹ Müller,²⁰ and Emanuel.²¹ The growth is a grayish ulcerating area covered with small tubercles and areas of caseation. In most of the cases reported there are typical tubercular lesions of the Fallopian tubes and uterus. The disease is to be differentiated from that described as *ulcus rodens vulvæ* by the presence of giant-cell tubercles, the absence of elephantiac growths, the presence of caseation, and the finding of tubercle bacilli, the presence of the tubercle bacilli being the most important. But it must be considered, in spite of these various diagnostic characteristics, that there is some indefinite relation between tuberculosis and at least some of the cases reported under the head of *ulcus rodens vulvæ*, lupus, etc. Particularly is this true of the case I here report. The tubercular peritonitis, the tubercular Fallopian tubes, and most probably tubercular endometritis, with the necessary discharge which must have contained tubercle bacilli and flowed constantly over the vulva, warrant this belief.

The hyperplastic changes may be a consequence, a secondary tubercular manifestation; the toxins here acting, and not the bacillus, as has been described in relation to erythematous lupus. Carcinoma can always be separated by the microscopical examination, and syphilis usually by the history of the case, the presence of other lesions, and the therapeutic test. From certain forms of elephantiasis it can only be separated with difficulty. The disease may be combined with elephantiasis.

The prognosis can scarcely be considered favorable. The lesions may heal with deformity, only to return again. They often return after cauterization or excision, and, as said, death may finally result from exhaustion or some intercurrent disease, as peritonitis, phthisis, or pneumonia.

Of 24 cases collected by Macdonald¹² 4 died.

When the lesions are localized to the labia majora or labia minora, or are in relation with the urethra and not advanced, one may possibly hope for a cure. The maintenance of the general health is of the greatest importance. Cauterization with fuming nitric acid, caustic potash, or sulphuric acid is advised. The best results seem to have followed early complete excision.

In conclusion I wish to call attention to a method by which I believe tuberculosis may be determined or excluded in such cases. Koch's tuberculin should be administered with the object of noting any reaction and its influence upon the growth. Any exudate which can be expressed from the ulcerating surface should be carefully examined for the tubercle bacillus by means of cover-glass preparations. This should be practised at varying intervals, particularly just before and during the menstrual period, and a large number of preparations should be studied. It is thought that tubercle bacilli may be more often found by this method than by the most careful search of the microscopically prepared tissue. Should the growth be excised, a guinea-pig should be inoculated as another method of determining the presence or absence of the bacillus of tuberculosis.

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FORTY CASES OF FEVER IN THE PUERPERIUM, WITH BACTERIOLOGICAL EXAMINATION OF THE UTERINE CONTENTS.¹

BY

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FOR the past two years it has been my routine custom to examine the uterine lochia bacteriologically in every case of fever during the puerperal period, whether occurring in the Obstetrical Department of the Johns Hopkins Hospital or in my private or consultation practice.

I wish to consider this evening the results of the examination of 40 such cases which have come under my observation within the past two years.

This work has possessed a double interest for me. For it is not only of importance from a theoretical and scientific point of view, in confirming in great part the observations of the many investigators who have busied themselves with the consideration of the etiology of puerperal infection, but it has also

¹ Abstract of remarks before the Baltimore Gynecological and Obstetrical Society, March 8, 1898.

led to the discovery of the part which may be played by several organisms which up to this time have not been observed in connection with puerperal infection.

In addition to its purely scientific aspects, the work is of equal, if not greater, importance in its practical applications; for it enables us to make a positive diagnosis as to the presence or absence of puerperal infection and of the species of organism or organisms which stand in a causal relation to it, and in many instances determines the prognosis and treatment of the case.

In our work we have adopted the usual arbitrary standard of considering as abnormal every case in which the temperature exceeds 100.4° F. (38° C.) at any time during the puerperium. As single rises of temperature slightly above this point occur in a considerable number of cases, we have adopted the rule of taking cultures from the uterus only in those cases in which the temperature rises to 101° F. (38.3° C.) or higher. Whenever the temperature reaches that point in a case in the obstetrical wards of the Johns Hopkins Hospital, no matter what may be supposed to be its cause, the head nurse at once notifies the resident obstetrician, and cultures are promptly made from the uterine cavity, by myself if possible, or by the resident in my absence. In the out-patient department and in my own practice the limit is placed at 102° F. (39° C.) on account of the technical difficulties which surround taking cultures outside of the hospital. With a few exceptions, in which there was a single rise of temperature, which fell before cultures could be made, the 40 cases under consideration represent every case coming under my observation during the past two years in which the above-mentioned temperature has been reached.

Before taking up the consideration of our cases in detail I think it will be well to describe the method by which we obtain the uterine lochia for examination. For this purpose we use the method which was first introduced by Döderlein: A glass tube, 25 centimetres long and 3 to 4 millimetres in diameter, is curved at one end like a uterine sound. It is then placed in a long, thick glass test tube, especially made for the purpose, whose open end is plugged with cotton, and sterilized by dry heat at 150° C. for one hour. The large test tube is simply intended to enable us to carry the smaller tube around with us in a sterile condition.

When a culture is to be taken the external genitals of the

patient are carefully washed with soap and hot water, and later with a 1 : 1000 bichloride solution, while the hands of the operator are carefully disinfected by soap, nail brush and hot water, permanganate of potash, oxalic acid, and bichloride. The patient is then placed in Sims' position, the thighs and buttocks being covered with sterilized towels, and a Sims speculum introduced. The anterior lip of the cervix is seized with bullet forceps and the cervix brought down as far as possible. The exterior of the cervix and external os are then carefully wiped off with sterile absorbent cotton, when everything is ready for the introduction of the tube, which is then taken from its containing tube, grasped at its straight end by two fingers, and its curved end carefully introduced into the cervix and then up to the fundus of the uterus, care being taken to avoid contact with anything until the os externum is passed. A large syringe is then attached to the free end of the tube, suction made, and a greater or less quantity of uterine lochia is aspirated into the tube. The syringe is then taken off, the tube removed from the uterus and both its ends sealed with sealing wax. It is now replaced in the containing tube and taken to the laboratory for examination, where it is nicked with a file and broken at that point when cultures and cover glasses are made from its contents. As the tube is hermetically sealed, it is not necessary to make the culture at once, but it may be laid aside for several hours until perfectly convenient.

The 40 cases which we have under consideration were from the following sources: 22 women delivered in the obstetrical wards of the Johns Hopkins Hospital, 8 women delivered in the out-patient department of the hospital, and 10 cases seen in consultation. I have included among the consultation cases several which were delivered outside the hospital by persons not connected with it, and sent to the hospital after symptoms of infection had appeared.

It therefore appears that 30 of the cases occurred among the 600 women who have thus far been delivered by the in- and out-patient departments of the hospital, while the remaining 10 were delivered by persons not connected with it.

In every case cover slips were made and the uterine lochia were plated upon ordinary agar, acid agar, and glucose-agar, and blood serum or blood serum and agar slants were inoculated, and anaerobic cultures made upon glucose-agar by inoculating a melted tube, allowing it to solidify, and then pouring the contents of a second tube upon it. With a few exceptions,

the blood was examined in every case for malarial plasmodia.

By these methods we found streptococci in 8 cases; staphylococci in 3 cases; colon bacilli in 6 cases; gonococci in 2 cases; anaerobic bacteria in 4 cases; unidentified aerobic bacteria in 3 cases; bacteria in cover glass, but cultures sterile, in 4 cases; diphtheria bacilli in 1 case; gas bacilli (*Bacillus aerogenes capsulatus*) in 1 case; typhoid bacilli in 1 case; cover glass, cultures, and blood sterile in 11 cases; cover glass and cultures sterile, with malarial plasmodia in blood, in 1 case—making a total of 44 cases.

This apparent discrepancy is due to the fact that we had to deal with a mixed infection in several instances: thus, we had one case with streptococci and colon bacilli, a second with staphylococci and colon bacilli, and a third with typhoid bacilli, streptococci, staphylococci, and an unidentified anaerobic gas-producing bacillus.

When we consider our work more in detail we find that it confirms the results obtained by most observers, and also adds several organisms to the already long list of bacteria which may lead to puerperal infection.

This will be rendered more apparent if we consider briefly and separately each group of cases. Streptococci were first cultivated from a case of puerperal infection by Pasteur in 1880, and since then have been demonstrated by an almost countless number of observers. Indeed, they are found so frequently, especially in fatal cases, that until very recently many authors considered them to be the sole organism concerned in the production of the affection. Recent work has, however, demonstrated that such is not the case, which, as already indicated above, is amply borne out by our own observations; but they are, nevertheless, the most important etiological factor in the production of puerperal infection, especially in its fatal forms. In the 40 cases, we demonstrated streptococci more frequently than any other organism, and found them in 8 cases (20 per cent), none of which, however, ended fatally. It is interesting to note that streptococcic infection has not yet occurred in any of our house cases, but was present in 3 out of the 8 out-door fever cases and in 5 out of the 10 consultation cases. In 6 cases the streptococci were demonstrated in pure culture, while in the other 2 cases we had to deal with a mixed infection. In one case they were associated with colon bacilli,

and in the other with typhoid bacilli, the staphylococcus aureus, and an anaerobic gas-producing bacillus.

It was not until 1888 that Brieger demonstrated that staphylococci might cause puerperal infection, and his results were soon confirmed by Döderlein, Högler, and others. It was generally believed that this variety of infection occurred but rarely, and, when it did, usually gave rise to mild forms of disease. Strüeckmann, however, in a very recent article, combats this view, and, from his own experience and a very exhaustive review of the literature, concludes that staphylococcic infection occurs more frequently than is usually supposed and frequently results in serious and sometimes in fatal illness. We have demonstrated staphylococci in 3 cases: once alone, and twice associated with other organisms. In one case we found the staphylococcus epidermidis albus alone and are inclined to consider it a contamination; in the second case we found the albus and colon together, while in the third case we found the aureus in combination with the streptococcus and typhoid bacillus. None of these cases died, and it is apparent that it is difficult to state what part, if any, the staphylococci played in the production of the symptoms observed.

The colon bacillus was not mentioned as a cause of puerperal infection until 1893, when Von Franqué demonstrated its presence in pure culture in one of his cases. The same year, in an article entitled "Puerperal Infection considered from a Bacteriological Point of View," I referred to Von Franqué's case and stated that it was remarkable that colon infections had not been observed more frequently, and predicted, attention having been directed to them, that they would probably soon be demonstrated in a considerable number of cases. This prediction has been amply fulfilled and a very large number of such cases reported—so many, indeed, that their mere enumeration would no doubt prove wearisome to you, and I shall therefore only mention the cases which have been reported by Gebhard, Krönig, and Marmorek. We have demonstrated colon bacilli in 6 of our cases: in pure culture in 4 cases, and combined with the streptococcus in one and with the staphylococcus albus in another case. Two of the pure colon cases were observed in the in-door hospital work, and the other 2 in consultation; while the mixed infection with the staphylococcus was observed in the out-patient department, and the one with the streptococcus was seen in consultation.

It is of interest to note that both of the hospital cases occurred in patients with eclampsia, in whom it was necessary to dilate the cervix manually and extract the child. In both these cases croton oil had been given before the operation, causing profuse watery stools during its performance, by which the hands were unavoidably soiled and therefore readily afforded a satisfactory explanation for the infection. In the streptococcus and colon case there was a complete tear into the rectum, through which colon bacilli gained access to the generative tract. The mode of infection in the other 3 cases was not so evident, but, when we consider the marked proximity of the rectum to the vagina, the cause is probably not far to seek.

Krönig in 1893 was the first to cultivate the gonococcus from cases of puerperal infection, and since then has abundantly confirmed his original observations, and in his recent work was able to refer to 50 such cases which he had observed himself. In 2 of our cases we were likewise able to demonstrate gonococci as the cause of the fever.

Thus far our work is perfectly in accord with that of the great majority of observers, and only serves to substantiate the doctrine that puerperal infection is wound infection, and like it may be due to a number of different bacteria which have been introduced into the patient from without.

We shall now turn to the consideration of 11 cases in which the relation between the clinical symptoms and the bacteria observed in the uterus is not so clear. In some of them we doubtless had to deal with sapremia in the sense of Matthews Duncan, while in several others it is doubtful whether the bacteria observed played any part in the production of the symptoms.

This aspect of puerperal infection has been studied by Bumm, Von Franqué, and especially by Krönig, who have demonstrated in a certain number of fever cases that the uterus did not contain the usual pathogenic organisms with which we are all so well acquainted, but various cocci and bacilli, which for the greater part could not be cultivated at all, or only anaerobically, and which could not be identified with well-known organisms.

In 4 of our cases we were able to cultivate strictly anaerobic organisms from the uterine lochia. In 2 of these cases we had to deal with short, thick bacilli, and in a third with a thick bacillus which was from three to five times as long as broad. None of these organisms appeared to possess a great degree of

virulence, as the highest temperature in these cases was 101.6° F. (38.8° C.). The fourth case, on the contrary, ended fatally, and in it we were able to demonstrate the gas bacillus (*bacillus aerogenes capsulatus*) and the streptococcus, which has already been reported by Dr. George W. Dobbin in the *Johns Hopkins Hospital Bulletin*.

In 3 other cases we were able to cultivate aerobic bacteria which we were unable to identify. From 2 of these we cultivated a non-pathogenic streptobacillus, which grew upon all media and stained by Gram's method.

Before labor we cultivated from the vaginal secretion of one of these cases an organism which was apparently identical with the one found during the puerperium, and it is a question whether it was a case of autoinfection or not. However that may be—and we are unwilling at present to express a definite opinion concerning it—it is the only case among the 40 which offers the slightest evidence in support of the doctrine of autoinfection. From the third of these cases, a woman who had aborted at the fourth month and who was not examined internally, and in whom the temperature rose to 103.5° F. (39.8° C.) on the eighth day, which, however, fell promptly after brisk purgation, we cultivated a non-pathogenic bacillus which had all the characteristics of the colon bacillus, except that it did not decolorize with Gram's stain and did not produce gas in glucose-agar.

In 4 other cases of this group we were able to demonstrate the presence of bacteria in the uterine lochia in cover-slip preparations, but were unable to cultivate them either aerobically or anaerobically. In 3 of these cases we found cocci and short, thick bacilli, while in the fourth case we had to deal with a large, thick bacillus. In this case the temperature rose suddenly to 104.4° F. (40.3° C.) on the fourth day, and fell within twenty-four hours after a brisk purgation, never to rise again.

It is apparent, leaving out of consideration the case of gas-bacillus infection, that we must be cautious in attributing the clinical symptoms observed in this group of cases to the bacteria which were demonstrated in the uterus; for it is more than likely, in several cases at least, that no causal relation existed between them and the symptoms observed, but that the symptoms were probably due to intestinal autointoxication and that the bacterial find was purely accidental.

On the other hand, it is probable that the bacteria which were demonstrated in several cases of this group did give rise

to the symptoms. But whether they were due to the direct invasion of the tissues by the bacteria, or to the absorption of poisonous substances, produced by bacteria, which were present in the necrotic material lining the interior of the uterus, are questions which we must leave unanswered until further study of this class of cases affords us data upon which we can base definite assertions.

The practical value of the bacteriological examination of the uterine lochia is clearly demonstrated by the study of this group of 11 cases, for by no other means could we so promptly arrive at a definite diagnosis and thereby exclude infection by the more dangerous pyogenic bacteria. Its practical value, however, is even still more strikingly illustrated by the group of cases which we shall now consider.

In 11 other cases, in which there was a more or less marked rise of temperature, the bacteriological examination was absolutely negative. In none of these cases were we able to demonstrate the presence of bacteria upon cover-glass preparations or by cultural methods, and in every case the examination of the blood was negative. We were therefore able in each case to exclude positively the presence of puerperal infection on the one hand and malaria on the other.

How great a gain this is can only be appreciated by those who have experienced the immense relief of finding that the uterus is absolutely sterile in a patient whose temperature has suddenly shot up to 103° or 104° on the third or fourth day of the puerperium, and in whom we suspect the possibility of an infection. This has happened to us upon a number of occasions, and the relief afforded by the negative result of the examination has more than repaid us for the labor expended upon the entire series of cases under consideration.

Further observation of this group of cases has shown that in many instances the temperature was probably due to an auto-intoxication from the intestines, as was indicated by the rapid fall of temperature after brisk purgation. In other cases the rise of temperature was undoubtedly due to disturbances about the breasts, while in a few cases we were absolutely unable to find any cause for the temperature.

In a case of quartan malarial infection occurring during the puerperium, the examination of the lochia enabled us to exclude positively the possibility of its being associated with a puerperal infection. And we do not consider that in future one will be justified in treating as malarial a rise of temperature occurring during the puerperium, unless the examination of

the blood reveals the presence of the characteristic plasmodia and the examination of the uterine lochia demonstrates the absence of bacteria.

In addition to the results already referred to, our work has led to the discovery of puerperal infection by several organisms which have not been previously described in this connection, or which, if described, occur but rarely. Thus, in one case we found the gas bacillus (*bacillus aerogenes capsulatus*), which has already been described by Dr. George W. Dobbin in the *Johns Hopkins Hospital Bulletin* and *Die Monatschrift für Geburtshülfe und Gynäkologie*; in a second case the diphtheria bacillus, described by me in THE AMERICAN JOURNAL OF OBSTETRICS¹; and in a third case the typhoid bacillus, which will be published by me in the *Centralblatt für Gynäkologie*, and which has already been described by Dr. Dobbin in this JOURNAL.²

I have attempted this evening to give an idea of the work which we are doing, without going into details, as we expect to publish our results more fully at a later period, when we shall base them upon a larger number of cases, giving more detailed information about the bacteria observed, and accompanying it with illustrative charts and histories of cases. But we hope that what we have said will be sufficient to convince you of the importance and practicability of this character of work, and of its value as a means of diagnosis and as a guide for treatment.

In conclusion I might add that this work was done either by myself, or under my supervision by Dr. George W. Dobbin, resident obstetrician, Johns Hopkins Hospital.

RELAXED ABDOMEN AND ITS EVIL CONSEQUENCES: ITS CURE; ITS PREVENTION.

BY

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TREATING of the abdominal muscles, Gray, in his "Anatomy,"³ says: The abdominal muscles perform a threefold action:

¹ See the August number, p. 180.

² Ibid.. p. 185.

³ "Anatomy, Descriptive and Surgical." By Henry Gray, etc.

1. When the pelvis and thorax are fixed they can compress the abdominal viscera by constricting the cavity of the abdomen, in which action they are materially assisted by the descent of the diaphragm. By these means the fetus is expelled from the uterus, the feces from the rectum, the urine from the bladder, and the ingesta from the stomach in vomiting.

2. If the spine is fixed these muscles can compress the lower part of the thorax, materially assisting in expiration. If the spine is not fixed the thorax is bent directly forward, if the muscles of both sides act, or to either side if they act alternately, rotation of the trunk at the same time taking place to the opposite side.

3. If the thorax is fixed these muscles, acting together, draw the pelvis upward as in climbing; or, acting singly, the pelvis is drawn upward and the vertebral column rotated to one or the other side. The recti muscles, acting from below, depress the thorax and consequently flex the vertebral column; when acting from above they flex the pelvis upon the vertebral column. The pyramidales are tensors of the linea alba.

There are, however, other and equally as important functions, which have not been mentioned in this summary, in which they are concerned, more particularly the anterior and lateral sections of the abdominal parietes.

It is now a well-established anatomical fact that the anterior and lateral abdominal walls are an important factor in the maintenance of the organs located in the abdominal cavity in their proper places. The *small intestines*, attached to a very large and very loose mesentery and from their nature very mobile, are hung up, on a peg as it were, on the vertebral column and require the firm pressure of a strong abdominal wall to hold them thus. The *large bowel*, also, lies but rather loosely attached and likewise requires the support of the abdominal parietes to hold it well in its position. It is the same with the *liver* and with the *kidneys*.

They play an important part in maintaining the normal equilibrium of the sanguineous circulation in the abdominal cavity. The pressure of the abdominal walls, with the constrictions of the muscles thereof occurring therein at varying periods, supplies the *vis-a-tergo* necessary for forcing onward and upward the blood current, the venous current more particularly, through the labyrinthine intricacies of the belly, and for which the heart alone does not suffice. Moreover, they are of the greatest importance in the proper physiological func-

tioning of the abdominal organs, especially of the digestive tract.

It has already been referred to by Von Pfungen,¹ and will be more fully shown elsewhere, that the stomach is much dependent upon the support of the abdominal walls, and that a failure of this support is one of the etiological factors in the production of atony of this organ. There can be no doubt that the contractions of the abdominal muscles, assisted by the pressure from above downward of the descending diaphragm, are the principal agent in the emptying of the gall bladder. It has been shown that this receptacle can be readily discharged by pressure from without, through the liver. A consideration of the position of the gall bladder will demonstrate that a strong contraction of the abdominal muscles, a forcible drawing-in of the abdominal parietes, must exercise such an expressive action on it.² It is also more than likely that the secretion of the bile and its extrusion from the liver are influenced thereby to a considerable degree.

As stated in the initial paragraph, the quotation from Gray, and as set forth in detail in my book, "Constipation in Adults and Children,"³ a normal condition of the abdominal walls is of the utmost importance for the process of defecation. The strong, voluntary contractions of the abdominal muscles—the "Bauchpresse"—upon the large bowel aid very effectually in the expulsion of the fecal matter from the sigmoid flexure and the rectum.

Under certain conditions, however, the abdominal walls become relaxed to a greater or lesser extent, and according to the degree of relaxation, of impairment of their force, impairment of the physiological functioning of one or more of the various organs of the abdominal cavity, and even dislocation thereof, may occur. We may thus have supervening:

1. *Constipation*.—This is most frequently met with. By reason of the failure of the abdominal pressure to assist in the transfer of the fecal matter through the colon and in its expulsion from the rectum, relaxed abdominal muscles become an important factor in the development of this trouble.⁴

¹ "Ueber die Atonie des Magens." Kl. Zeit- u. Streitfragen, Wien.

² See Herz: "Abnormitäten in der Form u. Lage der Bauchorgane," etc.

³ Illoway: "Constipation in Adults and Children, with special reference to Habitual Constipation and its Most Successful Treatment by the Mechanical Methods." 1897.

⁴ See Illoway, *ibid*.

2. Retardation of, slowing in, the outflow of the bile from the gall bladder; perhaps also slowness of secretion and extrusion from the liver. This may possibly be one of the principal factors in the production of the constipation and its attendant phenomena, coated tongue, headache, etc., so frequently attendant upon relaxed abdomen.

3. *Atony of the stomach.* This is not infrequent. The constipation is no doubt as much at fault here as the abdominal walls, perhaps even more.

4. *Enteroptosis.* Generally it is the large bowel that is displaced; occasionally the small intestines also are displaced. In pendulous belly the small intestines almost always sink down into the pelvis. Sometimes, as a result of the relaxed abdomen and the enteroptosis, a *gastroptosis* ensues.

5. *Instability of the kidney*—movable kidney; nephroptosis.

6. *Hepatoptosis*—descent of the liver. According to Landau,¹ the most frequent cause of this is pendulous belly, the extreme degree of relaxation of the abdominal walls. As a fact, it has, up to the present time, been found only in women with such a condition of the abdomen. It need only be recalled here—the details do not pertain to us now—that these various morbid conditions and abnormalities are attended each by its train of symptoms, and that they may in their turn again give rise to other pathological conditions likewise followed by morbid manifestations.

7. It has already been said that the normal abdominal walls are an important factor in the maintenance of the equilibrium of the circulation in the abdominal vessels. When this factor fails and the equilibrium is disturbed the current in the veins is slowed and a tendency to congestion, to abdominal plethora, is developed. This may manifest itself by the appearance of *varicose veins*, of *large and easily bleeding hemorrhoids*.

8. *Weakness of the heart.* Wagner² ascribes to this abdominal plethora the weakness of the heart so often found in women who have borne frequently and in whom there is a marked relaxation of the abdomen.

9. *Dragging forward and downward of the bladder.* In one case of very marked pendulous belly, which reached down nearly to the middle of the thigh, the bladder must have been dragged forward and downward over the symphysis pubis, so

¹ "Die Wanderleber u. der Hängebauch der Frauen." Berlin, 1885.

² Deutsche Medicinal-Zeitung. 1885, No. 3. Report as to the Naturforscher-Versammlung in Magdeburg. Also quoted by Landau, loc. cit.

as to shut off the urethra almost entirely. In fact, it was for this difficulty in urination that she came to consult me. The urine was voided with great difficulty and much straining and twisting into various positions. The outflow was attended with much burning in the urethra. Elevation of the belly, replacing it and maintaining it in position with a properly constructed bandage, at once relieved this trouble.

There can be no manner of doubt, and it has been confirmed to me by my own experience, that of all persons afflicted with relaxation of the abdominal walls, a relaxation that may be called pathological, 96 per cent are women and but 4 per cent men—perhaps not even that many. Corresponding to this, it is the female sex that furnishes the greatest number of cases of dislocation of the various abdominal organs.

It has been stated in my book on “Constipation,” already referred to, that *enteroptosis* is found mostly in women and but very rarely in men. Though no special statistics have been gathered up, very nearly all the cases reported by writers upon this topic have been of women. Thus, Cuilleret¹ in various communications reported 7 cases of enteroptosis; all were women, and in all of them a relaxation of the abdominal walls was noted. Krez² reported 5 cases, all women. Six cases seen by me³ were all in women. Rosenheim⁴ says explicitly that coloptosis is a very frequent occurrence in women of the laboring classes, especially in the older women. Landau’s⁵ collected and corrected table gives us 24 cases of unmistakable hepatoptosis; of these, 23 were women and 1 a man. He himself saw 16 cases, all in women. Adding these to the table we get a total of 40 cases, of which 39 were women. It is the same with the kidney. We may occasionally see a ren mobile in a man. Usually the mobility is then very slight; it is a ren mobile of the first degree, but never a complete nephroptosis. Very nearly all the cases of movable kidney of the second degree and all the cases of complete nephroptosis have been seen in women.⁶ Of 667 cases of ren mobile, movable kidney,

¹ Gazette des Hôpit., Paris, 1888.

² Münchener Med. Wochenschrift.

³ “Constipation in Adults and Children,” etc.

⁴ “Krankheiten des Darmes.”

⁵ “Die Wanderleber u. der Hängebauch der Frauen.” Berlin, 1885.

⁶ Glenard (Provence médicale, April 16, 1887) gives the following table of 148 cases of nephroptosis seen by him: first and second degrees, 62 cases—47 women, 15 men; third degree, 81 cases—79 women, 2 men; fourth degree, 5 cases, all women.

nephroptosis, collected by Kuttner, 584 were women and only 83 men. Though I do not claim that these cases were all due to relaxation of the abdominal walls, as there are other etiological factors to account for the loosened and roaming kidney—as tight lacing, etc.¹—it is nevertheless true that the greater number were so produced. The results of Herz² seem to controvert this; it will be found correct, however, if we bear in mind what will be claimed further on, that we may have a relaxation of the abdomen, a marked relaxation, without the pendulous belly.

This great difference in liability to these morbid states between the two sexes will be readily understood when we take into consideration the causes that produce relaxation of the abdominal walls, a loss of tone of the abdominal muscles. These are: (a) The various diseases, acute or chronic, that cause emaciation and consequent disappearance of the panniculus adiposus, or that cause large effusions into the abdominal cavity that greatly distend its walls, and with all this a weakening of tone of the whole muscular system. (b) Abdominal tumors that largely distend the abdominal walls and are later on removed by operation. (c) Pregnancy.

As to the first category of causes, the various *acute* or *chronic diseases*, they are well known to all and details need not be gone into here. Thus much only must be said: that with the acute diseases the weakening of the abdominal muscles is not of much import at the time, for the reason that the patient is confined to his bed, that he is upon a light diet, and that the physiological functioning of the various organs must be assisted more or less by appropriate medication. As he convalesces and gains in strength and weight, the vigor and firmness of the abdominal walls return and they become as competent as before.

As to the chronic ailments (consumption, diabetes, empyema, etc.), they are usually of so grave a nature, produce so much general disturbance, impede so much the activity and movements of the patient, that the lesser evil, the relaxation of the abdominal walls and its consequences, is of but little moment, except perhaps in advanced diabetes in persons who had been very corpulent; and here we can greatly mitigate the bad effects of the rapid emaciation and consequent relaxation of the abdominal walls by a properly applied bandage.³ This

¹ Osler, "Practice of Medicine." Herz, loc. cit. ² Loc. cit.

³ See Illoway, "Constipation in Adults and Children." etc.

applies also to other chronic maladies. Moreover, if the patient recovers, with the return of health and vigor the muscular tonus returns, the panniculus adiposus becomes replaced, and the abdominal muscles regain their normal force.

Category (b) is referred to by some as a cause of pendulous belly. It may be true in cases where the patient is very poor, badly nourished, and remains so after the operation; or in the very rare cases where the growth is of enormous size. My own observation, however, limited, it is true, in this respect, has been that though on removal of the growth the abdominal walls may remain for a time in a loose, even pendulous state, ultimately the abdominal muscles regain their tone to a large extent and become again competent, especially with the aid of a well-adjusted support, to fulfil their proper functions.

Category (c). It is the general consensus that pregnancy is the most frequent cause of relaxation of the abdominal walls—of a relaxation that may be truly pathological. To this may be added, judging from my own experience, that usually it is then of a permanent character.

The relaxed abdomen as a result of pregnancy is of two kinds:¹

1. *The wrinkled belly.* The tissues of the anterior abdominal wall, from about three centimetres above the umbilicus down to the symphysis pubis, are very soft, very flaccid, very thin; the parts beneath can be readily felt through: the skin lies in folds, or rather in large wrinkles, and presents the appearance of shrivelled old age, in marked contrast to the tissue above the line indicated.

2. *The pendulous belly.* By reason of excess of amniotic fluid, of twin pregnancy, the abdominal walls become enormously distended and remain so after delivery. *Work* has been cited as a factor, but I am very much inclined to doubt this. My own experience has been that work, the continuance of the usual activities by the ordinary well-nourished pregnant female, is not only not harmful but actually beneficial; it keeps her digestive organs in good condition, and endows her muscles with force for her day of trial. The abdomen here hangs, like an immense bag doubled on itself, down over the symphysis pubis, as far as the middle of the thigh at times, and exceptionally even further. As can be readily understood, it

¹ Prochownik (Archiv. f. Gynäkologie, vol. xxvii., 1886) makes a somewhat different subdivision. He treats the subject as it presents itself at the period of the puerperium.

is chiefly in these two forms of relaxed abdomen, in which all firmness is gone from the structures constituting the anterior abdominal wall, that the various displacements of organs, and even morbid conditions, are produced. It is for this reason that we find these troubles so preponderant in the female sex.

It is very evident therefrom, and, as has been said, attention has been called thereto by a few writers, that the maintenance of the normal abdomen is of the greatest importance to the welfare of the human being, especially the female; and still, despite all this, it has received but little attention at the hands of that section of the medical profession which, according to our exposition here, is chiefly concerned therein—namely, the obstetricians. You can take up almost any text book or treatise on obstetrics, and, with the exception of the briefest reference in some to a binder after delivery, you will find no mention of any care of the abdominal walls during pregnancy or after delivery. This is the more strange as a rather troublesome and sometimes even dangerous form of rupture may result from this distension during pregnancy—namely, umbilical or ventral hernia. As Samuel Cooper says in his “Dictionary of Surgery,” “for at this time it often happens from the too great distension of the belly or from unguarded motion when the parts are upon the stretch.”¹ Prochownik² has also strenuously called attention to this danger.

However, it is not alone the obstetricians but also the gynecologists who are very much concerned in this, for there are many morbid conditions peculiar to women that may result from a relaxation of the abdominal walls. The influence of the anterior abdominal walls upon the circulation in the abdominal and pelvic cavities has already been pointed out. It has also been said that where, by reason of relaxation of the abdominal parietes, this influence failed, a state of congestion, of abdominal plethora, resulted. In some instances where the opportunity offered, postmortem examination showed enormous dilatation of the plexus pampiniformis of the genital tract and of other pelvic veins.

In consequence of this abdominal and pelvic plethora, this general congestion in all the structures in the pelvis, we may have uterine hemorrhages; sanguine effusions into the cellular tissue of the pelvis or into the labia; we may have disturbances

¹ See Pitha und Billroth, “Surgical Pathology,” vol. iii., part ii., upon this subject.

² Loc. cit., “Die Diastase der Bauchmuskeln im Wochenbett.”

of nutrition in the various organs constituting the genital tract, and pathological changes, as metritis, endometritis, and ovarian disease,¹ to which Hegar² has already called attention, may follow. It can, and does undoubtedly, cause occasional failure of result of gynecological operations otherwise successfully performed. The bands holding the uterus may become relaxed thereby and flexions and versions of the organ result.³

With all this you find that, with but few exceptions, the gynecologist has treated this matter as nonchalantly as the obstetrician.

The Possibility of a Cure.—Landau has said that something may be accomplished toward the cure of this condition by the use of the mechanical methods of treatment. It is no doubt true that in the *lighter* forms much may be accomplished; my own experience is confirmatory of this, and in my book on “Constipation” the *massage* manipulations for relaxed abdomen form a special group, and the applications of *electricity* and *hydrotherapy*, as there described, apply equally well to the condition under consideration. Moreover, in the first form here described, resulting from pregnancy—the wrinkled belly—the fattening process in conjunction with the other measures named is of much service. It is, however, a long and often wearisome and generally a very expensive treatment that not many of the class to which those so afflicted usually belong can undertake.

In the severer forms, where the concomitant troubles, especially on the part of the stomach and bowels, are the most obstinate, the relaxation is permanent, and, as I have said in the chapters on treatment in the book referred to,⁴ but little can be done for their relief except by way of palliation with appropriate bandages, and even this is attended with considerable difficulty in the wrinkled belly.

The questions, therefore, that are of paramount interest are: 1. Is this relaxation an absolutely unavoidable consequence of pregnancy? 2. If not, what measures can we take to prevent it?

“Is it unavoidable?” From my own obstetrical experience—which, it is true, was very limited—I can say that of the cases I attended I saw a relaxed abdomen, a pendulous belly, in but

¹ Landau, loc. cit.

² “Ueber einige Folgezustände hochgradiger Erschlaffung der Beckenbauchwand.” Deutsche Med. Wochenschrift, No. 36, 1884, p. 572.

³ Landau, loc. cit.

⁴ “Constipation in Adults and Children.” etc.

one. This was a primipara with so enormous an abdominal distension that friends and neighbors were positive that she was carrying triplets, or at least twins of huge proportion. When she was delivered it was of a tiny little baby weighing not more than five pounds, but the amount of amniotic fluid contained in the sac was something enormous. This woman I saw professionally only at the time of her parturition, and after the third day post partum her mother took command and I did not see her any more. Later on I had occasion to examine her abdomen and found a markedly pendulous belly.

In later years I have had occasion to examine a great many women for gastro-intestinal diseases, and have found a very considerable number who, despite more or less numerous births, had preserved their abdominal walls fairly intact; four in particular in whom the abdomen presented an almost nulliparous smoothness and firmness. The most remarkable one among these latter was a woman who had, according to her statement, given birth to thirteen children, and still her abdomen was of such smoothness and firmness as to excite my wonderment and that of the medical gentlemen who happened to be present at the time.¹

It must be further set forth, as having an important bearing upon this question, that many of these women were of the lower strata of society, dispensary patients—that is, hard-working women, wives of poor laborers, hucksters, etc., who had no time to loll, but had to continue to attend to their household duties, to do the washing, ironing, scrubbing up to within a few hours of their labor, and who had none too much time (not more than ten days) to spend in bed in recuperating after their labor. Prochownik² has also met with such instances, and he says expressly that the intactness of the abdominal wall, both in appearance and to the touch, was such that, were it not for the statement to the contrary, serious doubt would arise in the mind of the most expert observer whether these women had ever given birth.

From my own experience, which is no doubt but the duplicate of that of other medical men, and more yet from that of

¹ Another equally interesting case has since been seen by me at the clinic, a woman who has given birth to eleven children and whose abdomen is yet perfectly smooth and firm. On careful search by myself and colleague, Dr. R. Abrahams, but ONE stria could be discovered, and that on the left side, in the inguinal groove at the left anterior superior spine of the crest of the ilium.

² Loc. cit.

the author just cited, I am compelled to answer the question, "Is it unavoidable?" with a decided negative.

We come, then, to the second question: "If not unavoidable, what can we do to prevent it?"

Before entering upon the consideration of this point let us see what takes place in the abdominal walls during pregnancy. Between the third and fourth months of pregnancy the tumor, the enlarging uterus, rises out of the lower pelvis into the abdominal cavity and a prominence of the belly in the hypogastric region becomes noticeable. The tumor rises gradually higher and higher until about the seventh month, when it has reached the umbilicus and this part of the abdomen becomes the most prominent, and more so as the gestation progresses.

The fundus of the pregnant uterus lies more or less upon the anterior abdominal parietes, even from a very early period—end of the third month. It is, moreover, pushed against it by the organs behind, the bowels, in which there appears about this time a tendency to the formation of an abundance of flatus, which again leads to a distension of the intestine. Thus, by its weight and through the *vis-a-tergo*, a certain amount of pressure is made upon the anterior abdominal wall from the symphysis pubis to above the umbilicus. With the growth of the tumor the abdomen becomes distended, until at about the period of parturition, when the climax is reached, the enlargement of the abdominal circumference at the umbilicus, the point of greatest pressure and distension, will amount to 150 to 200 centimetres or more.

The degree of pressure and of distensive force exercised depends upon two factors—the size of the growing tumor and the roominess of the abdominal cavity. The distensive force will naturally make itself felt most in the transverse muscles of the abdomen, the external and internal oblique, and the transversalis, whilst the vertically placed muscles, the recti, are but slightly affected thereby. In correspondence with the natural erect position of the human being, the pressure will be greatest upon the linea alba, that terminal of tendons and aponeuroses.

When, from disproportion between the two factors named, the distension in the lateral muscles and the pressure upon the linea alba become great, the membranous structures of which the latter is formed are put more or less upon the stretch, and a diastasis, a separation of the recti muscles, results. Prochownik saw a number of such cases, and I myself saw one

in which there was so much separation that the hand, in its width, could be passed into the cavity of the abdomen beneath and the intestines felt. When she lay down the abdomen presented a rather curious appearance: whilst the rest of the abdomen lay out smooth and round as usual, there was in the centre a sunken-in, triangular space with its apex about the umbilicus and the base below at the symphysis. This space was bounded on either side apparently by a firm ligamentous band, and at the apex the bellies of the recti muscles, contracted, could be readily felt. It is in this way and by subsequent rupture that a ventral hernia, already referred to above, may develop as a result of pregnancy. Changes in the muscular structure itself are produced. There is, firstly, as a result of over-distension, a loss of elasticity; from the same cause there is a separation, a drawing apart of the fasciculi of the muscle bundle and of the individual fibrillæ of the fasciculus. It is possible that some of the fibrillæ are torn across. All this entails impairment of nutrition. Then, secondly, by reason of the great pressure exercised, an atrophic process, with consequent disappearance of muscular tissue, ensues.

The transversely placed muscles—those upon one or the other side more particularly, for the reason that the tumor lies more upon one side than the other—are mainly affected. The recti muscles are protected against harm by the strong membranous tunic investing them and by their position and arrangement, and only in exceptional cases, as already mentioned, are they also put upon the stretch laterally and in any way affected by the pressure.¹

In the skin also changes are found. Küstner,² studying the striæ commonly regarded as cicatrices and so described, found they were not such, no solution of continuity either in the rete Malpighii or in the stratum corneum having occurred. But the epidermis ran more evenly in the striæ; the elevations and depressions marking it in the normal skin were here, to a great extent, obliterated. Langer,³ continuing these investigations, discovered that the course of the fascicles of connective-tissue

¹ See Archiv. für Gynäkologie, Bd. xv. Krause und Felsenreich: "Ueber Spannungs-Verhältnisse der Bauchhaut bei Gravidität." Prochownik, loc. cit.

² Virchow's Archiv., Bd. lxxvii. O. Küstner: "Zur Anatomie der Graviditätsnarben."

³ Anzeiger der K. K. Gesellschaft der Aerzte in Wien, No. 23, 1879: "Ueber die Textur der sogenannten Graviditätsnarben." See also Archiv. für Gynäkologie, Bd. xv., article of Krause und Felsenreich.

fibres was changed; that they now ran transversely and parallel. He noted similar changes in the papillæ and the blood vessels. This transposition of the structures was produced by a distension or pull which nullified the normal elasticity of the tissue.

The measures to be employed for the prevention of undue relaxation of the abdominal walls can be divided, from the period of time at which they are employed, into two great groups: (a) Those to be employed during pregnancy. (b) Those to be employed after parturition.

Group (a) comprises: 1. Dietary measures. 2. Inunctions with oil or vaseline. 3. Abdominal support by bandage.

Dietary Measures.—As is well known, various disturbances of the digestive tract manifest themselves at this time. With some it is mainly the stomach. Aside from the nausea there seems to be in some cases an inertia of that organ—an atony; the food lies long in it, gases develop, and there is much distress until free eructation brings partial relief. With others it is the bowels; they become sluggish and obstinate constipation follows. In some, hemorrhoids develop, and by their painfulness during defecation prove a bar to the free discharge of fecal matter. In the wake of this constipation, flatulence and marked distension of the intestines follow, not infrequently giving rise to pain in the abdomen about the colic flexures.¹

In the first place, where the stomach is chiefly affected, great benefit is derived, according to my experience, from the administration of a digestive ferment; I prefer the pancreatic preparations, either alone or combined with oxalate of cerium or with small doses of bismuth subnitrate, or both. When the trouble seems to be centred in the bowels, we must see to it that they are kept soluble, and the flatus thus prevented from accumulating, by the use of a properly regulated pill, by rectal injections, by a mild salt, all these alternated at periods to maintain their efficacy and to preserve, as far as possible, the tone of the bowels. Where the constipation is dependent upon abdominal plethora as a result of cardiac weakness, already mentioned, these factors will demand our attention.² Much may be done by the proper regulation of the diet, by the avoidance of such articles as naturally tend to create flatulence and such as seem to lie heavy upon the stomach; of the latter the woman herself is the best judge. By a careful attention to these points

¹ See Illoway, "Constipation in Adults and Children," etc.

² Ibid.

much, I think, can be accomplished for the greater comfort of the patient at the time and her well-being at a later period.

The further recommendations are tentative and submitted to the judgment of the gentlemen who make obstetrics their special study.

Inunctions with Oil.—It is ancient knowledge that inunctions with oil are beneficial to the skin; they lend smoothness and suppleness to it. Thus applied the oil penetrates, partly through the friction made in the process and partly by absorption, into the deeper layers, into the sebaceous glands, into the layer of adipose. It may penetrate still deeper, even into the subcutaneous tissues, as is well known to pediatricists. It is through this that the inunctions tend to maintain the elasticity of the skin. Olive oil, cotton-seed oil, vaseline, lanoline can be used for this purpose, and, where agreeable, the oil can be perfumed. As the tension on the abdominal walls already begins at the end of the third or middle of the fourth month, the inunctions could be begun at this period.

Abdominal Support.—In cases of extraordinary dilatation, where the tension on all parts of the abdominal parietes is very great and where, therefore, much atrophy, much destruction of tissue can be expected, as in cases of twin pregnancies, of hydramnios, of inordinate distension by flatus, the woman would derive great benefit from the use of a properly arranged abdominal supporter—not a belt, I should say, as ordinarily arranged, but like a double apron, fastening upon straps over the shoulders, a flap behind and one coming forward and upward; or, perhaps still better, the abdominal supporter with an attachment of short pantalettes (or trunks), as recommended in *THE AMERICAN JOURNAL OF OBSTETRICS*, March, 1884, and shown in Landau's book already referred to, page 134.

(b) Those to be employed after parturition: 1. For immediate use after parturition. 2. For a subsequent period.

1. This means the well-known binder, which needs no further elucidation here. Though some eminent obstetricians have declared it useless, it has nevertheless maintained itself by the consensus of the feminine portion of the world in general and of the larger part of the profession. Prochownik,¹ who also studied this question, attributes to it, to its general use, the fact that greatly relaxed abdominal walls, pendu-

¹ Loc. cit.

lous bellies, are much less frequent in England than in Germany.

2. The measures coming under this head are those already referred to in the section on the *cure* of relaxed abdomen.

1138 MADISON AVENUE.

TWO CASES OF PRIMARY CARCINOMA OF THE FUNDUS UTERI.¹

BY

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AND

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(With two illustrations.)

CASE I.—Mrs. S., 50 years of age, consulted me for a wasting discharge, pain, and a bad odor about her person. I found that she had passed the change in life seven years before. For the past year she had had a number of small hemorrhages, and in the interim was having a discharge which was beginning to smell badly. There was no loss of flesh and but small loss of strength. The uterus was found to be large but freely movable; there was no cervical ulceration. A diagnosis of intrauterine malignant disease was easily arrived at and hysterectomy proposed. The woman weighed between two and three hundred pounds, and the operation, which was performed by the combined method, was a difficult one.

The abdomen was opened, the ovarian arteries ligated, and the broad ligament incised down to the uterine arteries. The bladder was then stripped free of the cervix. A gauze pad was left in the cul-de-sac and the abdominal incision closed. The ordinary incisions for vaginal hysterectomy were now made in the vagina, and clamps placed on both broad ligaments, including the base of the corresponding uterine arteries. The gauze pad left in the cul-de-sac, and which had kept the intestines out of the field of operation, was now removed and the vaginal wound packed with sterile gauze. The forceps

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, May 19, 1898.

were removed at the end of forty-eight hours and the patient made an uninterrupted surgical recovery.

Dr. Henry L. Williams has kindly made a most searching examination of the specimen, which has proved of more than ordinary interest; and the character of the growth, as well as the chances of recurrence, will be seen from his report, which is here given:

“PATHOLOGICAL REPORT. *Macroscopic Examination.*—The specimen consists of uterus, tubes, and ovaries. The uterus is considerably enlarged, measuring 11 centimetres in length and 16 centimetres in circumference at its widest part. Its width at the fundus between the cornua is 6 centimetres, and its antero-posterior diameter is 5 centimetres. Opposite the internal os the circumference is 13 centimetres. The fundus has a somewhat boggy feeling. Below the line located 2 centimetres above the internal os the uterine wall is firm, hard, and tense.

“The external os is sufficiently open to admit a No. 20 sound. Upon the portio vaginalis the mucous membrane is smooth, glistening, and normal in appearance, and is freely movable over the underlying tissue. The peritoneal covering extends over the upper half of the anterior surface and covers the upper three-fourths posteriorly. At all points below the line of peritoneal attachment the tissue exposed is decidedly rough and granular.

The tubes and ovaries are greatly shrunk and atrophied, but otherwise appear normal. The remains of the broad ligament are to all appearances uninvolved.

An incision has been made through the anterior surface, opening the uterine cavity from the fundus to the external os. While the tissue immediately surrounding the external os is normal in appearance, the wall of the lower half of the cervical canal has been excavated and a cavity formed of sufficient size to allow the passage of the index finger. The upper portion of the canal is filled with a fungoid, granular, and rather compact proliferation of cervical mucous membrane. The cervical wall measures $2\frac{1}{4}$ centimetres in thickness. From the external to the internal os the canal is $2\frac{1}{2}$ centimetres in length, while the distance from the summit of the fundus to the external os measures $9\frac{1}{2}$ centimetres.

“The entire uterine cavity above the middle of the cervical canal is filled with a luxuriant, soft, fungoid growth, easily torn away by the finger, reddish in color, and covered by a

slimy exudate. At the fundus the uterine wall measures $1\frac{1}{2}$ centimetres in thickness; opposite the centre of the body it is 2 centimetres thick, and just at the internal os it measures $2\frac{1}{4}$ centimetres.

“On examining the cut section of the uterine wall the lower two-thirds is seen to be infiltrated with calcareous deposit to a point just within the internal os. Macroscopically the tissue at the points of attachment of the broad ligaments is entirely free from involvement.

“*Microscopic Examination.*—Sections of tissue were taken from the fungoid masses filling the uterus, from various portions of the uterine wall, from the loose connective tissue of the broad ligaments, and from the tissue just beneath the peritoneal covering on the posterior surface. These were hardened in absolute alcohol, mounted, and examined, with the following result:

“Sections from the masses filling the uterine cavity show universally fields of atypical malignant adenomatous glands. These glands have so proliferated that almost the entire connective-tissue stroma has been absorbed and the whole mass replaced by glandular structure. So extensively has the stroma been absorbed that in many fields it can scarcely be found, while in others it has disappeared altogether; here the epithelial elements of one gland came into immediate contact with those of another.

“A point of special interest in the case is the fact that the epithelium lining the glands remains as either a single or a double layer throughout nearly all parts of the specimen. And while fields can be found in which the epithelium of adjacent glands has so proliferated that they are fused in a homogeneous mass of carcinoma cells, the glands almost invariably remain distinct, with lumen uninvolved. A careful examination, however, reveals the presence of epithelial cells free in the stroma wherever it can be found.

“The peculiar atypical shape of the malignant adenomatous glands is especially noteworthy. Instead of remaining separated from one another, as in the benign form, the glands frequently fuse and the lumen of one runs into that of another. In some cases the glands are so branched and twisted that they resemble the appearance of a rosette.

“Examining sections cut across the entire thickness of the uterine wall, the uterine muscle is seen to be invaded to a considerable depth, in portions being so honeycombed by the

malignant growth that the only muscular remains appear as narrow bands surrounding alveoli filled with atypical adenomatous glands (see Fig. 1).

“Sections of the uterine wall from the lower third of the body and just below the internal os show that the tissue here has undergone extensive calcareous degeneration and that the process of extension has been thereby considerably delayed.

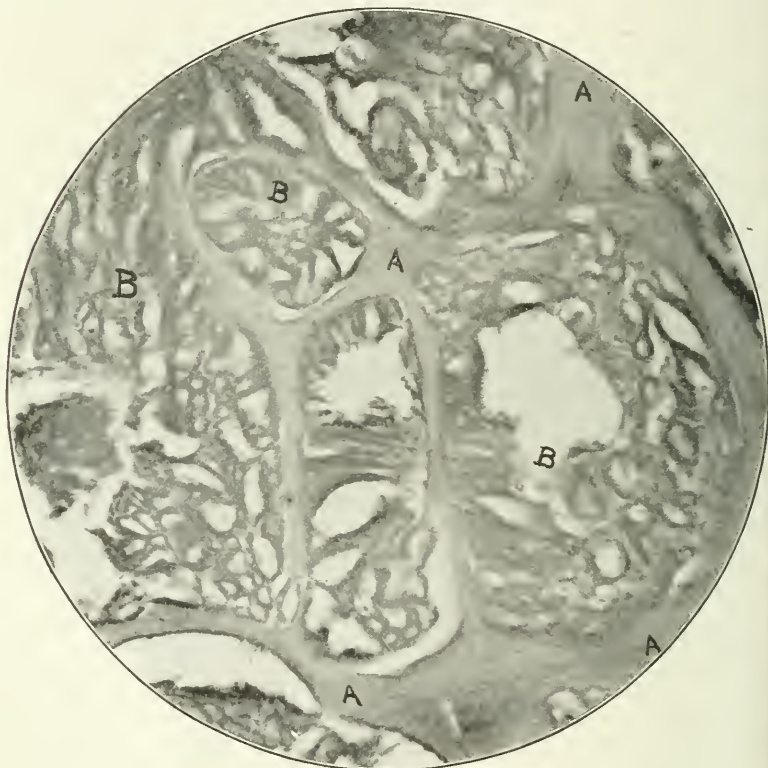


FIG. 1.—Section from the uterine wall, showing muscular tissue (A) honeycombed with malignant adenoma (B).

At the vault of the fundus the uterine muscle has been invaded but a short distance.

“A section of muscular tissue from the posterior surface just beneath the peritoneum is of special interest. In this tissue, entirely uninvaded by the adenomatous growth, we find two blood vessels of considerable size, cut in cross-section, in the lumen of which are found emboli made up of nests of atypical epithelial cells. Whether or not these cells were forced into

the circulation by manipulations at the time of operation is uncertain. But in any case there is no assurance that there were not other emboli which were borne into the general circulation outside the field of operation, and the finding of such an embolus certainly has an important bearing on the prognosis.

Careful examination of the sections of loose connective tissue removed from the broad ligaments (see Fig. 2) and immediately

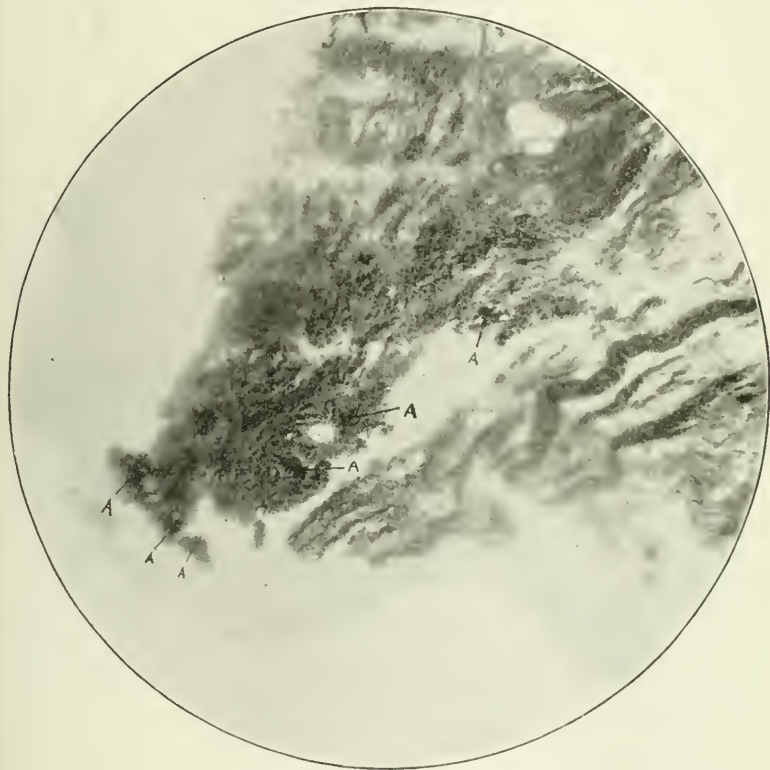


FIG. 2.—Section from the loose connective tissue of the broad ligament, showing infiltration of small nests of epithelial cells (A).

beneath the peritoneum on the posterior surface reveals slender chains of epithelial cells in the lymph channels and small nests of epithelial cells in the spaces between muscular fibres, in both instances. Since this is so, an unfavorable prognosis as to the complete eradication of the disease must be made, and the patient will be watched carefully, for at least three years, for indications of return at the seat of operation or metastasis to other organs of the body. As, according to the clinical his-

tory, the symptoms have been markedly present for a year, there is no doubt that, had the woman sought treatment many months sooner, a positive diagnosis of malignancy, from microscopical examination of scrapings, could have been made at the time and danger of return or metastasis probably avoided."

CASE II.—Within the past month I have had a second patient who clinically and macroscopically resembles almost identically the case of Mrs. S. Mrs. D., 46 years old, was always regular in her menstruation until two years ago, since which time she has been bleeding almost continuously. Lately there has been some odor to the discharge. The bleeding has never been profuse, but recently pain has become a prominent factor. She has lost both strength and flesh. The uterus was found large and movable, with no ulceration of the cervix. Intrauterine malignant disease was so evident that a hysterectomy was immediately advised and accepted. The patient was stout, weighing about two hundred pounds, and in consequence the operation was performed in the same manner as in the case of Mrs. S.

Dr. H. L. Williams has also examined this specimen, and his report, as in the first case, details the actual condition found, as well as the future chances of the patient for recovery.

• PATHOLOGICAL REPORT. *Macroscopic Examination.*—The specimen consists of a somewhat enlarged uterus with tubes and ovaries attached. The uterus measures 9 centimetres in length, $6\frac{1}{2}$ centimetres in width, and 17 centimetres in circumference at its largest part. Upon the posterior surface four small subperitoneal fibroids are found, somewhat larger than peas, and just behind the right uterine cornu a subperitoneal fibroid, the size of a Brazil nut, is seen. Several small interstitial fibroids can be seen in the uterine wall.

"At the fundus a slight doughy sensation is elicited by the finger in the region of the cornua. The portio vaginalis is smooth, whitish, and perfectly healthy in appearance, and freely movable on the underlying tissue. The external os is open, the cervical canal patulous, and a No. 26 sound can easily be passed into the uterine cavity. Externally there is nothing to indicate malignant disease.

"The ovaries are shrunken and atrophied, and no follicles are seen on the surface. The tubes appear normal.

"The cavity of the uterus has been opened by an incision through the anterior wall from the fundus to the external os. On examining the interior the cavity is seen to be lined by a

prolific spongy endometrium, distinctly pink in color, presenting a fungoid appearance, and covered upon the surface by a thin, yellowish exudate. The fungoid projections from the endometrium are exceedingly soft and friable, and readily removed by the finger. On the anterior wall is a mass somewhat firmer in consistence, about the size of an English walnut, which projects rather prominently into the uterine cavity.

“The diseased tissue is found to extend well up into both cornua, and the surface of the entire body cavity is affected. At the ring surrounding the internal os the morbid process comes to an abrupt termination, and the tissue of the cervical canal is apparently healthy.

“The uterine wall measures 2 centimetres in thickness near the centre of the body, while at the cornua it is reduced to 8 millimetres. The length of the cervical canal is $2\frac{1}{2}$ centimetres, and its wall is 1 centimetre in thickness.

“*Microscopic Examination.*—On examination of fungoid particles removed from the endometrium, a considerable portion of the tissue is seen to have undergone necrosis, and large fields are found made up of amorphous cheesy débris. Between the necrotic areas are seen the small round cells of inflammation in large numbers, and likewise diffuse areas of various sizes made up of atypical epithelial cells. All remains of glandular structures have disappeared. From these specimens a diagnosis of diffuse carcinoma is easily made.

“Examination of the nodule attached to the inner anterior wall shows a solid mass of epithelial cells of the glandular type. These cells are so diffuse as to closely resemble the structure of sarcoma, but their shape is that of the atypical cells of glandular carcinoma. Fine bands of connective tissue are seen here and there running through the growth, and the blood-vessel walls are thick and well preserved.

“On examining sections including the entire thickness of the wall, the uterine muscle is seen to be diffusely infiltrated with small nests of epithelial cells to a point immediately beneath the peritoneum. The peritoneum itself has not been affected.

“No sections were made from the tissue of the broad ligament, so it cannot be stated whether or not this tissue has been invaded. But from the fact that the uterine wall is so diffusely infiltrated to the under-surface of the peritoneum an unfavorable prognosis as to the ultimate result must be made.”

Taken together, the specimens are of unusual interest in that they represent two distinct types of carcinoma of the fundus—

the first, a distinct malignant tubular adenoma in which the glands are everywhere preserved throughout all areas of the growth; the second, a pure diffuse carcinoma in which no glands or remnants of glands can be found in any part of the specimen.

THE USE OF MAMMARY GLAND IN THE TREATMENT OF
FIBROIDS OF THE UTERUS. AND OF PAROTID
GLAND FOR OVARIAN DISEASE.¹

(PRELIMINARY REPORT.)

BY

JOHN B. SHOBER, A.M., M.D.,
Philadelphia.

MY attention was forcibly called to the value of certain gland preparations in the treatment of diseases of the female pelvic organs by a paper which was presented by Dr. Robert Bell, of Glasgow, at the meeting of the British Gynecological Society, May 14, 1896. This paper was entitled "The Treatment of Carcinoma of the Uterus, Certain Forms of Ovarian Disease, and Fibroids of the Uterus by Means of Thyroid, Parotid, and Mammary Gland Therapeutics."²

The results reported in this communication were so remarkable that, were it not for the high standing of the writer in the profession and his well known conservatism, one would be inclined to discredit the statements made and suspect that they were based upon inaccurate diagnoses and careless clinical observations. The subject of the paper was entirely new to the profession, and while it was received seriously, it nevertheless provoked only limited discussion.

I feel that the subject cannot be better introduced than by quoting largely from Dr. Bell's paper. He says that when local disease commences in an individual, the organ which it takes possession of must have departed from a healthy standard prior to this, and that the weakened condition of the organ affected may have been influenced by a morbid or functionally altered state of an organ in close physiological rela-

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, May 19, 1898.

² The Lancet, vol. i., 1896, p. 1496.

tionship. The healthy action of the mucous membrane, the skin, and the adjacent connective tissue appears to be dependent upon a peculiar action of the thyroid gland, as shown by the recent studies in myxedema and in psoriasis. Therefore why may not epithelioma of the cervix uteri, which arises in the epithelial layer of the mucous membrane, be due to the absence of some obscure catalytic influence of this gland? It has also been observed that disease of the thyroid gland is often accompanied by an excessive metrorrhagia, showing that the function of this gland exerts some potent influence upon the lining membrane of the uterine canal. Epithelioma does not attack a previously normal cervix uteri, but if there is present any lesion, as laceration, hypertrophy due to long-standing endometritis or endocervicitis, then this unhealthy state acts as a predisposing cause to the development, not only of epithelioma, but to affections of a less virulent type.

In the discussion which followed, Dr. Leith Napier referred to a paper by Dr. Jouin, who, while treating for obesity a patient who had a fibroid of the uterus, by means of thyroid extract, discovered at the end of twelve months that the fibroid had shrunk from two inches above the umbilicus to one inch above the pubes. This led him to try it in other cases. The second, a soft fibroma, was benefited; the third, a hard fibroid, was not. The recent views of soft fibroids, regarding them as associated with morbid glandular action, make it quite probable that thyroid extract may exert an influence upon them.

In closing the discussion, Dr. Bell said that he used mammary gland extract for fibroids because the mammæ and the uterus are in close physiological sympathy, whilst the physiological relation between the parotid gland and the ovaries, as shown by the frequent metastasis (mumps) between the two, led him to give parotid extract in ovarian disease.

In his paper he reports three cases of epithelioma of the cervix treated with thyroid gland. The first was 48 years old. After curettement and cauterization with nitric acid she took thyroid elixir, one drachm three times a day, and had local treatment with ichthyol tampons twice a week for three months. The discharge ceased and the general health improved. At the end of eight months there were no symptoms of local disease. The second case was 65 years old. Under the same treatment she was cured at the end of five months. A third case had been under treatment only two months. All symptoms of malignancy disappeared and the general health of the patient

was rapidly improving. There remained a slight trace of erosion in the posterior lip. She was still under treatment.

Two cases of fibroid tumor of the uterus were treated with elixir of mammary gland with most astonishing results. In one case, at the end of six weeks the tumor, which before had been quite globular in shape and would compare to a pregnancy of about seven months, was very much reduced in size and had become quite irregular in outline. Two weeks later there was further evidence of reduction in the size of the tumor, and at the end of four months the tumor was not more than one-fourth its original size and had ceased to give any trouble. She was still taking the mammary platinoids twice a day. The other case was a small fibroid of the anterior wall. She took ten grains of mammary platinoids daily. At the end of eight weeks the hemorrhage had ceased, the anemic condition had disappeared, and the general health was restored. Two cases of menorrhagia and dysmenorrhea are reported cured by the use of mammary gland elixir.

A number of cases of ovarian disease are reported as having been remarkably benefited by treatment with parotid gland elixir in conjunction with the use of ichthyol tampons. One case had a left ovary the size of a mandarin orange; at the end of four months there was no sign of the disease whatever. Another case was one of enlarged right ovary, with metrorrhagia which continued for about three weeks. At the end of four months' treatment the ovary had attained its normal condition and the menorrhagia and metrorrhagia had ceased. Another case of enlarged right ovary and tube excessively painful had been under his care for seven years. He had curetted her twice and had treated her with ichthyol tampons twice a week for two years. After taking parotid platinoids three times a day for six weeks, the ovary was smaller and decidedly less tender and the general health was markedly improved. He quotes two cases of ovarian diseases treated by Dr. McGregor with parotid platinoids with equally astonishing results.

Dr. Bell concludes his paper in the following words: "When we come to consider the close physiological relationship of one structure with another, and the peculiar effects of marriage on the one hand and virginity on the other, the latter rendering certain organs much more prone to disease than would have been the case had these been brought into functional activity, we are naturally led to conclude that something may be done

to combat the tendency to pathological changes which would appear to take place in these circumstances, so that an immense field for observation seems to be opening out and will surely repay any amount of time expended upon elucidating these recondite physiological and pathological problems."

I am indebted to the firms of Armour & Company and the Phospho-Albumen Company, of Chicago, for liberal supplies of their various glandular preparations, with which I have been enabled to carry on the series of experiments about to be related. The Armour Company's preparations are desiccations of the several glands, in powder and tablet form. The Phospho-Albumen Company's products are powdered extracts of the glands, in which the fibrous connective tissue and other inert matters have been eliminated in the process of preparation; and it is claimed for these products that they are therefore less liable to decomposition, and, since they are supposed to contain only the essential principles of the parenchyma, they should be equally efficacious. At present I am unable to speak with any certainty as to the relative merits of these preparations. I can only say that I have had equally gratifying results with each.

FOUR CASES OF FIBROIDS OF THE UTERUS TREATED WITH MAMMARY GLANDS.

CASE I.—M. W., white, age 32, Ipara, consulted me first on November 7, 1897. Menstruation began at the age of 14 and was always regular and normal until after the birth of her last child, three years ago, when it began to be more profuse than usual and was attended with some pain. Two years ago she noticed that she had a growth in the abdomen, and during the past year this growth had increased very rapidly in size. For a year past she suffered much with metrorrhagia and menorrhagia, backache, headache, and constipation. She had become a morphia habituée, taking as much as two or three grains a day for the past year or more. She was well nourished but very anemic and extremely nervous.

The tumor was a large, globular fibroid of the uterus, rising to the level of the umbilicus, with a lobule rising higher on the left side. The tumor extended laterally into both flanks. The abdominal walls were stretched tightly over the tumor, and its general size and appearance resembled a pregnancy at term. It was an extremely hard growth, and so firmly fixed in the pelvis that it was quite immovable. The following measure-

ments were taken: girth, 37 inches; from symphysis pubis to upper edge of tumor, $7\frac{1}{2}$ inches; lateral measurement, $10\frac{1}{2}$ inches. Upon vaginal examination the cervix was found to be hard and low down. A mass filled up the right broad ligament and protruded into the right fornix.

Her next menstrual period began on December 7 and lasted until the 18th. As usual it was profuse, contained clots, and was accompanied by pain. In the midst of this period—namely, on December 14—I began the use of mammary gland, employing the powdered extract of the Phospho-Albumen Company. Two and a half grains in gelatin capsules were ordered, to be taken three times a day after meals.

Her next menstrual period began on January 2 and lasted only three days. It was free but not profuse; there were no clots and only slight pain. Her general health was much improved. She declared that the medicine aided her materially in her efforts to stop taking morphia; that she seemed to require less morphia while under the influence of the mammary gland. The tumor seemed to have risen out of the pelvis and to have contracted laterally; it was more movable and its surface felt irregular. The anterior superior spines of the ilium, which before were masked by the tumor, could be easily located. The growth was decidedly smaller, as shown by the following measurements: girth, 37 inches, the same as last measurement; from symphysis pubis to upper edge of tumor, $6\frac{1}{2}$ inches, being $\frac{1}{2}$ inch smaller; lateral measurement, 9 inches, being $1\frac{1}{2}$ inches smaller. The cervix lay behind the symphysis pubis, much higher in the pelvis than at previous examination.

Her next menstruation was delayed eleven days, occurring on February 10, and it lasted three days. It was less free than at any time during the past two years and was normal in other respects. Her general health was steadily improving. She was taking much less morphia. The tumor had diminished markedly in size, the upper edge being one inch below the umbilicus; and the surface of the growth was irregular, giving some definition to several lobules. Depressions could be felt over the surface. The mass was not so firmly fixed, but had a limited range of lateral motion.

My supply of mammary gland from the Phospho-Albumen Company now being exhausted, I commenced the use of Armour & Company's desiccated mammary-gland tablets. Each tablet represents two grains of the desiccated powder, and each grain of this powder is equivalent to six grains of the raw gland of

the sheep. I commenced with one tablet (twelve grains of the raw gland) three times a day, and gradually increased the dose to six tablets (seventy-two grains) a day. On the second day after taking the six-tablet dose she sent for me to come to see her, and I found her in bed suffering with intense pain and severe cramps in the abdomen. There was no tympany and the pain was not intestinal. *The pain was located in the tumor, which was very hard, and pressure upon it increased the pain.* She was nervous and trembling; the skin was moist; the pulse 96, firm and regular; the temperature was normal. This occurred on March 12. I stopped the treatment for five days. The pain ceased at the end of thirty hours. On the 17th she began taking one tablet three times a day. On March 25 her menses appeared, being two weeks overdue, and lasted only three days. They were normal in every respect. On April 4 the following note was made: "The tumor is freely movable in the abdominal cavity and is quite irregular in outline. The abdominal walls are no longer tense from intra-abdominal pressure, but are soft and yielding and can be lifted away from the tumor. The upper edge is one inch below the umbilicus and there is marked lateral contraction. The tumor has been reduced at least one-third of its original size. The general health of the patient has steadily improved, her metrorrhagia and menorrhagia have ceased, and she is rapidly overcoming the morphia habit." She menstruated again April 20. It lasted three days and was normal in character and quantity.

CASE II.—L. G., colored, single, 32 years old, has been conscious of a growth in the abdomen for four years. She attributes this to having been kicked in the stomach five years ago. For the past two years she has suffered with profuse and painful menstruation and a free leucorrhea. During the last year she has had a great deal of metrorrhagia, flowing every two weeks, and the flow lasting always six or seven days. She is very anemic and debilitated, and says she is losing strength rapidly.

Upon examination a large, irregular, multinodular fibroid of the uterus was found occupying the pelvis and extending on the right side two inches above the umbilicus. One nodule about the size of a lemon was found half-way between the pubes and umbilicus, freely movable over the main growth. The bulk of the tumor was on the right side, filling up the right iliac fossa and extending on this side two inches above

the umbilicus. In its central portion the upper edge was on a level with the umbilicus.

The patient was placed upon mammary-gland treatment on January 13, 1898, taking at first two and a half grains of the Phospho-Albumen Company's powdered extract three times daily. When the supply was exhausted she was placed upon the tablets of Armour & Company, and the dose was gradually increased from three to six daily. It was noted that while taking six tablets she suffered with cramps in the tumor. The dose was then reduced to four tablets daily. The following is a record of her menstrual periods: January 15 to 22, seven days, profuse, painful, clots; February 9 to 15, six days, profuse and painful, no clots, three days early; March 8 to 14, six days, free, no clots, pain only during the first and second days, one day early; April 7 to 12, five days, free, no clots, some lumbo-sacral pain and bearing down, two days late.

The periods are becoming regular. She is losing less blood. Metrorrhagia has ceased. Her general health is improving. She is gaining weight and strength and says she feels well able to do her work. The tumor has not decreased very markedly in size, but there is no doubt that it is smaller. It has become more irregular in outline and the lobules are becoming more distinct. She is still under treatment, and the ultimate result will be reported.

CASE III.—M. D., colored, age 33, primipara. Complained of backache, bearing down, ardor urinæ, constipation, abdominal cramps, bloating, and headache. Upon examination were found lacerations of perineum and cervix, also a multinodular fibroid uterus. Two small nodules were on the left lateral wall near the fundus, and from the posterior aspect of the fundus arose an oblong, pedunculated fibroid about four inches long and two or three inches broad. It could be felt rising two inches above the pubes. It was freely movable from side to side, and when at rest inclined toward the right iliac fossa. She was wearing a truss for its support, having mistaken it for a rupture. She began the mammary-gland treatment November 26, 1897, taking the powdered extract of the Phospho-Albumen Company at first, and later the tablet of Armour & Company.

Her menstrual periods, which during the past two years have been somewhat irregular, lasting about three days, and always accompanied by pain, have become regular, without pain, and of normal quantity. Her general health has greatly improved, and there has occurred a remarkable change in the

tumor. The two nodules on the left lateral wall have entirely disappeared. The pedunculated nodule on the posterior aspect of the fundus is now less than one-half its original size. She is still under treatment, taking six tablets daily, and the final result will be reported.

CASE IV.—R. Y., colored, 34 years of age, is the mother of one child who is 21 years old. She has had two miscarriages, the last one being ten years ago. She has had leucorrhea for many years. Her menses are irregular, lasting three days. The flow is profuse, with clots, and accompanied by severe pain at times. She often has a showing between her regular periods, lasting a day or two. There is a large, irregular, multinodular fibroid of the uterus extending to within one inch and a half of the umbilicus. It is pear-shaped and freely movable laterally.

She began treatment April 2, taking one tablet three times a day after eating. Her last menstrual period was March 20 to 23, being very profuse the first and second days. On the 9th she was ordered four tablets daily. She menstruated April 20 to 23; there was less pain and the flow was not so free as usual.

On May 7 she said she felt greatly improved in health. Her clothes, which would not meet before treatment, are loose now. The tumor is perceptibly smaller; the upper edge of it lies two inches below the umbilicus.

FOUR CASES OF OVARIAN DISEASE TREATED WITH PAROTID GLAND.

CASE V.—A. J., colored, age 20. Mother of one child born six months before she applied for treatment. She had slight laceration of the cervix, a free muco-purulent uterine discharge. The uterus was slightly enlarged and the fundus was inclined to the right side. A tender mass was felt on the right side, consisting of a thickened tube and a prolapsed, enlarged ovary. Slight fulness and tenderness existed on the left side. She suffered with backache, right and left ovarian pain, and dysmenorrhea. The uterus was curetted January 11, 1898, with the result that the leucorrhea was checked. The condition of the ovaries, however, remained unchanged and the ovarian pain continued. In March, after a painful menstrual period lasting from the 2d to the 7th, the leucorrhea returned and examination revealed a very tender, enlarged, prolapsed right

ovary and a thickened tube, also fulness and tenderness on the left side.

March 15 she was placed upon powdered extract of parotid gland (Phospho-Albumen Company), two and one-half grains in capsule three times a day. She suffered very little pain during the month, and on April 1 menstruation came on without pain and lasted three days. Her next period was from May 1 to 4. It was normal in every respect. Tenderness on pressure in vaginal fornices has disappeared. The right ovary is slightly prolapsed, enlarged, but no longer tender. Left ovary normal. She is still taking parotid gland.

CASE VI.—A. D., colored, age 19; married two years; sterile. Menses irregular, usually four or five days delayed. Severe left ovarian pain for two days before the flow. The uterus was found anterior, movable, and slightly tilted to left side. The left ovary was prolapsed, as large as an English walnut, and exquisitely tender to the touch. Right side normal. She began powdered extract of parotid gland, two and a half grains in capsule three times daily, on December 11, 1897, and local treatment with ichthyol and glycerin tampons twice a week. On the 21st the left ovary was found to be reduced about one-third in size and less tender. The right ovary was slightly congested and tender. She menstruated January 8 to 11 on time. There was slight pain the day before the flow. Again on February 5 to 8 without previous pain. On February 9 examination showed both ovaries of normal size and not tender to touch. The March period was delayed four days, but it came on without pain and was normal. Gland treatment was stopped. The April period appeared on time and was normal. Her general health has improved in every way.

CASE VII.—L. C., colored, 35 years of age; had been married three years and was sterile. She applied for treatment March 17, 1898. She stated that she menstruated irregularly; that usually it was very scanty, lasting about two days, always preceded by severe, sharp pain the day before, which pain lessened usually during the flow. Her last period began on March 9 and ended on the 16th; it was profuse, with clots, and very painful. She had been annoyed by a profuse leucorrhoea for many years. The fundus of the uterus was tilted to the left side. There was fulness and tenderness in the left fornix. The right ovary was enlarged, prolapsed, and very tender. Treatment: extract of parotid gland, two and a half grains in capsule three times a day, and local treatment with

ichthyol and glycerin tampons twice a week. Her next period came on one week early and lasted three days. She suffered only slight pain and had much improved in general health. The leucorrhœa had diminished. The fundus was still slightly tilted to the left side; it was more freely movable. There was no tenderness on the left side, and the right ovary was smaller and not so painful. The treatment was continued.

CASE VIII.—Mrs. T. B., 26 years of age; had been married six years and was sterile. A few months after her marriage she had an attack of acute pelvic inflammation, which she attributes to having caught cold during a menstrual period. This kept her in bed several weeks. She entirely recovered from this attack. Menstruation is always on time, lasting from two to four days. It is very scanty and unaccompanied by pain. There is no leucorrhœa. She applied for treatment for intermittent pain in the left ovarian region, which seems to have no connection with the menstrual epochs. The uterus was found of normal size, not freely movable, and slightly posterior. The left tube was thickened and the ovary slightly enlarged and decidedly tender on pressure. She took parotid-gland extract for two months, during which time the pain ceased, and upon examination I was amazed to find the tube and ovary quite normal.

The results obtained with parotid gland in ovarian disease, while striking, are not convincing. Equally gratifying results are often obtained by local treatment alone and by other well-recognized methods. I am convinced, however, that the use of the gland materially aided and hastened the ultimate results.

The influence of mammary-gland products in the treatment of fibroid tumors of the uterus, as shown in the cases above reported, is altogether unusual. These women are all under the age of 35, and therefore the menopause cannot be said to have had any influence upon the results which have been attained. Without the aid of any other form of treatment the tumors are all steadily decreasing in size. Without exception the general health of the women is improving.

Under the influence of the preparation menorrhagia and metrorrhagia cease; the menstrual periods come on at regular intervals; the bearing-down sensations, the backache and headache and general debility, previously complained of, become memories of a painful past. Even if under a prolonged course of treatment the tumors are not dissipated, we can at least claim that the necessity for operative interference has been delayed.

It would be folly at the present time to attempt to offer an explanation of the physiological action of mammary gland. That it has a powerful influence upon the uterine muscle, connective tissue, or glandular elements seems evident. The fact that large doses of the gland caused cramp-like, contracting pains in the tumor in Cases 1 and 2 would seem to bear out the above statement.

Many thoughts suggest themselves in connection with the subject. I should like to try the effect of mammary gland for the purpose of aiding involution of the uterus after labor. Again, what would be the effect upon the development of the uterus of removing the mammary glands in young mammals? The relative influence of the gland upon subserous, interstitial, and submucous fibroids should be carefully studied.

As this paper is merely a preliminary report, I will not attempt to discuss these questions at present, but I hope to do so in the near future.

HYSTERICAL ERUCTATIONS.¹

BY

E. L. TOMPKINS, M.D.,

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In looking over the Index Medicus of the Surgeon-General's Library for ten years back I have been able to find only a very few reports of cases of hysterical belching, although there were very many of hysteria with other manifestations. I hope I will be pardoned, therefore, for quoting at some length the few cases that I could find which were analogous to the one I record below.

Dr. John Wyllie² says that it is a very common practice for hysterics to take air into the esophagus and stomach and then bring it up again in frequent and noisy eructations, and that Hoppe-Seyler recommended a chemical analysis of the gas drawn off from the stomach or given off from it by eructations, in order to test whether it is the product of fermentation or whether it is atmospheric air introduced from without.

¹ Read before the Washington Obstetrical and Gynecological Society.

² Edinburgh Hospital Reports, 1895, vol. cxi.

Wyllie states that "there are certain diagnostic features, common to most of the patients who take air into the esophagus or stomach, that are highly characteristic. (1) Most of them are obviously nervous and hysterical, though fairly well nourished. (2) Their eructations are usually frequent and loud; sometimes they will eructate loudly forty or fifty times in the minute, and a few of them will keep up this noisy performance for hours. (3) If, after such a patient has described the terrible sufferings produced by 'the wind,' the physician quietly asks him or her to let him hear the wind, the patient will almost always begin voluntarily to make a series of the noisy eructations. (4) If now the physician introduce between the teeth (molar) of the patient on one side a good-sized cork, so as to keep the mouth wide open, the patient in a great number of instances instantly loses the power of producing voluntary eructations, because, the mouth being wide open, he cannot gulp air into the esophagus and therefore has none to bring up in eructations."

He uses the cork for diagnostic purposes as well as therapeutic measures. It breaks up the habit that the patient has acquired.

Dr. G. A. Sutherland¹ reports a case of "air suction and eructation" in a man. This man would make a forcible inspiration, raising the shoulders and depressing the larynx, a curious noise being produced at the same time in the back of the throat. This would be immediately followed by a loud eructation, evidently expiratory in time. The patient was able to repeat this as often as necessary. This was considered the result of a persistently dilated stomach, although no *sarcinæ ventriculi* could be found. He states that "the gastric disease is usually trifling and the affection is to be regarded as dependent on a habit acquired and developed by individuals of a more or less neurotic temperament."

A. Pitres² reports a very interesting case, which resembles my case in many respects: "The patient was a young girl of 17 years, fresh, robust, of a gay and happy disposition, but irritable and impressionable to excess. She had enjoyed good health up to the age of 15. At this time she had, for no reason, a dispute with her mother, and, as she opposed her caprices, she lost consciousness and had a severe attack of typical convulsive hysteria. Some days after she had her

¹ London Lancet, 1896, ii.

² Le Progrès médical, 1895, i.

menstruation for the first time. Her period, very abundant for twenty-four hours, was suddenly arrested. The patient then felt a ball arising from the stomach into her throat, and she commenced at once to have a spasmodic hiccough, accompanied by loud eructations, which continued for three weeks, and ceased finally, suddenly, without her having known the reason why. Two months afterward the hiccough and belching reappeared. This time they lasted eight consecutive weeks and stopped, as the first time, suddenly. One year later, without known cause, the same troubles were reproduced and they persisted without appreciable lessening for three months, when the patient was admitted to the hospital. She bore then some hysterical symptoms unquestionably. She had especially a hyperesthesia, very marked, of the right side of the body and a double concentric contraction of the visual field. But these symptoms, whose existence she was completely ignorant of, did not preoccupy her. That which had decided her to enter the hospital was the attacks of hiccough and eructations, which came on regularly two or three times a day and continued about three hours each time. These attacks were habitually brought on by the ingestion of food or by slight crosses or disappointments. They manifested themselves by a sensation of epigastric uneasiness, which was soon succeeded by an anxious respiration, interrupted by quick inspirations, which gave place to hiccough. Some minutes after each hiccough was followed by a loud expiration of a sort of convulsive belch, of low note, resembling the barking of an angry dog. Hiccoughs and belches succeeded each other regularly for two and a half to three successive hours. Then the eructations became less sonorous, respiration resumed its normal rhythm, and everything returned in order until a new crisis caused the production of the same series of phenomena.

“In the intervals she would occupy herself in various ways. She had the outward appearance of perfect health. Sometimes she complained of loss of appetite. She was nourished only with milk and soup, the ingestion of solid food provoking immediately explosions of violent belching. Her abdomen was not puffed out, there was no tympanites, no abdominal pain, no symptom of cardiac or pulmonary lesion. During the prolonged stay of three months that this patient has been in the hospital we have endeavored many times to arrest or modify the attacks of hiccough and belching, without succeeding. Pressure on the ovaries, of the epigastrium, of the phrenic

nerves, etc., has always been absolutely ineffectual. Fixing her attention by conversation, reading, the act of sewing, etc., did not render the noises less loud or less frequent. If we insisted on the patient making an effort to control herself, the belching would be for some minutes less loud than before, but was reproduced immediately. The therapeutic means that we have employed have not produced any appreciable improvement. Cold douches over her entire body, the spraying of ether on her epigastrium, faradization of the epigastric region, washing out of the stomach, the giving of large doses of chloral, of bromide of potassium, of belladonna, of hyoscyamus, etc., have absolutely failed. After three months of treatment the patient has left the hospital in the same condition that she was in on the day she entered. I have had no news of her since she went away."

Pitres, in his clinical lecture No. 11 of the same volume, says that the ancient authors describe under the name of "morbus ructuosus" a disease the principal symptom of which is frequent belching, and that, while evidently the most of the cases were flatulent dyspepsia, some appeared to be examples of belching of nervous origin. "It is thus," he goes on to say, "that Petrus Borellus tells the history of a man who was inconvenienced by belchings so frequent and so overpowering that he was obliged to let the gas escape every instant, before everybody, even between two words. Joeschke speaks of a lady of 50 years of age who for several years expelled, night and day, abundant gas from the mouth. It is difficult to believe that it is a question of simple gaseous dyspepsia. J. P. Frank has reported, in his once classical treatise of 'Practical Medicine,' a series of cases in which the nervous nature of the eructations is made evident by this peculiarity, that the belches were provoked by cutaneous excitation. A man experienced from his youth up some eructations, repeated whenever he was touched on the radial border of his forearm. A young lady commenced suddenly to belch loudly and repeatedly in the midst of a rapid waltz. It would stop, and commence again whenever she was touched on a certain spot on her body. A lady had the same phenomena whenever she was touched on the pulse, etc. De Haen and Hensch have observed analogous cases."

We all know that there are certain spots known as epileptogenic centres. I have been told by Dr. Hammond of a boy who would have an epileptic fit whenever a high collar touched

a certain place on his neck, and I myself have seen and treated a man who would have an epileptic fit whenever there was very firm pressure made on his ear.

The following is the history of my patient:

Mrs. A., white, æt. 30; married; two children. Family history was as follows: Was always a nervous child; had chorea at the age of 13, which lasted two or three years. Was 18 years old and grown in size before her first menstrual period appeared. She also had diphtheria at this time. Her periods were very irregular for two or more years being too infrequent. She was married at 23 years of age. Her married life had been pleasant. She is of a rather jealous disposition. No miscarriages. Just before this belching commenced she had several severe shocks. Her brother-in-law was instantly killed by jumping from a burning building. About the same time her father died, and three months later her niece, to whom she was much attached, was killed by being run over by a wagon. She took all the family troubles much to heart. She had been working very hard and was considerably run down about this time, when the belching came on suddenly. This was in June, 1896. She thought she had indigestion. The belching would occur, so she said, as fast as she could breathe. This continued for three days and she sent for her family physician. She was very constipated at this time, and he gave her many medicines to cause movement of the bowels, but nothing acted for five days. She was very much "bloated," and was told that she had a knot in her intestine. After her bowels moved the belching continued. Her physician treated her for three months without being able to stop the belching, and then referred her to me. She came under my care August 25, 1896. I found her apparently well and going about the house, but she was belching at the rate of about 30 to 40 times a minute, and so loudly that she could be heard easily in the next room with the door closed. I did not see how she could stop long enough to eat or drink; but she was fairly well nourished, although she said she had lost fifteen or twenty pounds. Her pulse was good but rapid; there was no organic lesion of the heart; the tongue was somewhat coated, but she said she did not taste anything particular on belching, either acid or otherwise, and did not suffer much distress after eating. She did not vomit and had very little or no nausea. The bowels were constipated and she passed a considerable quantity of normal urine. She suffered a good deal from headache, but had no chills or other

evidence of malaria. A vaginal examination showed the uterus to be slightly lower down than normal, a lacerated cervix, and a sensitive and probably slightly enlarged left ovary; right ovary not tender. She also told me that sexual intercourse gave her no pleasure, but on the contrary almost threw her into hysterics.

But her main trouble, and for which she sought relief, was this persistent belching. Her husband worked at night and she was much alone and more nervous at night, and the belching was worse at that time.

From the history she gave I was sure from my very first visit that hysteria was an important factor in the case. I was also sure that I could stop it with the bromides. I gave her a mixture of bromide of sodium, pepsin, and charcoal, and pushed it until she could not walk; but the belching continued, although she was thoroughly bromidized. I also directed her to keep a record of the number of times that she belched in each hour, and to exercise some will power in trying to control it. In this way she reduced the number very considerably, but the relief seemed merely temporary. I had no reason to think that there was dilatation of the stomach, although no examination for *sarcinæ ventriculi* was made, but the stomach was washed out a number of times. Some mucus would be seen, but she was not made to feel any better by the irrigation, and, as the belching continued, it was discontinued. Thinking her eyes might need attention, especially for the headaches, I sent her to Dr. Marmion, who gave her glasses for hyperopia, and she thought her headaches were much relieved, but the belching continued as before. Applications of iodine to the sensitive ovary and cotton tampons seemed to help her for a while. For the first hour or two after they were introduced the belching seemed to increase, and then for the rest of the two days or more that they were kept in it would almost entirely cease; so, thinking that the mechanical support of the tampons to the uterus was what caused relief, I was tempted to put in a hard-rubber pessary. She was perfectly delighted with this, reported that she had no pain and the belching was practically stopped. In about ten days after her visit to me I was sent for in a great hurry. She was suffering severe pain over her whole abdomen, so she said, and was apparently tender on pressure, was very hysterical, and was belching worse than I had ever seen her. I found that her husband had attempted intercourse without removing the pessary and caused severe pain. I was compelled to

remain with her two or three hours, giving her one-half of a grain of morphia hypodermatically in two doses, applying poultices to the abdomen, and finally resorting to chloroform before I could get her to sleep. Knowing that belching, especially in these cases, is frequently associated with hiccough, I thought that there might be some irritation of the phrenic nerve. Ranney states that the causes of hiccough may be classed under three heads: "(1) Those of direct irritation of the phrenic, as occurs in the case of mediastinal tumors, aneurism of the arch, pneumonic or pleuritic effusion, etc. (2) Those of a reflex nature, as in disease of the urinary organs, the uterus, and the intestinal tract and liver; the irritation of biliary or renal calculi, irritation of the pharynx, esophagus, and stomach, and diseases of the peritoneum. (3) Those of central origin, as occurs in hysteria, local brain or spinal diseases, blood-poisoning (as in fevers, cholera, dysentery, etc.), after emotional excitement, and from the general anemia of nerve centres after hemorrhage."

I therefore determined to try the effect of electricity, and applied the constant current, one pole (negative) being placed over the origin of the phrenic nerve (from the third to fifth cervical nerves, inclusive), and the other (positive) pole over the course of the phrenic nerve in the neck. The effect was remarkable. The belching ceased instantly, and as long as the current was kept up there was not an indication of it; but it would return when the current was stopped. I was much pleased at the result, and thought perhaps that there was not so much hysteria as I had at first felt sure of. But for experiment I tried placing the electrodes somewhere else than over the course of the phrenic nerve, and I found that the belching would stop even when the current was nowhere near the phrenic nerve. I then told her that I could stop it by pressure with my thumb over the phrenic nerve, and whenever I would press with my finger firmly on the neck the belching would cease. She was made to press her own finger on her neck in the same spot that I had pressed, and found she could control it to a great extent. Seeing that she was so impressionable, I thought hypnotism might be used to advantage, and tried hard to hypnotize her. But she did not prove to be a subject. I advised her to have the lacerated cervix uteri repaired and the left ovary removed if it should prove to be diseased, but she would never consent. I advised her husband to refrain from sexual intercourse for a long time, and urged her to not over-

tax her strength in her housekeeping duties. She had become so much mortified and ashamed at belching that she would hardly ever leave the house, dreaded seeing any stranger and desired to be alone as much as possible, and was quite despondent. She declared that if she did not soon improve she would do something desperate. I finally persuaded her to go to the seashore, where she would have new surroundings. She stayed several weeks and was very much improved in every way. She fattened considerably, the belching was practically stopped, and she declared that she was cured. She had no more pain in the ovarian region and no headache. For about two months I saw nothing of her, until a short time ago I was sent for and found her with a handkerchief tied around her head, belching as fast as I had ever heard her and complaining of pain in the side. She said that she had not slept, but had belched all night. She stated that she had had a very lively quarrel with her husband the evening before because he insisted on going out and leaving her, and that the belching had commenced immediately. She was very much excited even then, and likewise disgusted with herself because the belching had returned. I gave her a mixture of hyoscyamus, camphor, and valerian, which had a very happy effect. Now she is doing very well; the belching only occurs at long intervals, and she is in a fairly good condition. She realizes that the symptoms return after any emotional excitement, and tries to refrain from it.

I think we are all obliged to see that hysteria was the predominant feature in this case. I have no doubt that the eyes and uterus and ovary all played their parts, but I believe they were very much secondary to the hysteria, as far as the belching was concerned.

P. S.—Since writing the above this patient has again come to me, stating that she had been free from belching until the day before, when the death of a dear friend was announced to her. She immediately turned very pale and began to belch. It has now been going on four days at a rapid rate, and so far I have been unable to stop it, although I have tried the use of the cork as suggested by Dr. Wyllie, of Edinburgh, and have also given large doses of bromide of sodium and hyoscyamus. She asserted that the headache and pain in her side only came after the belching.

A CASE OF RECURRENT VULVAR GROWTH¹

BY

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AND

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(With one illustration.)

DR. WELLS' REPORT.

IN May, 1894, I was called to see Mrs. McD., who was in the sixth month of her ninth pregnancy. She had sent for me on account of intense burning pain in the vagina, around the vulva, and extending backward over the perineum toward the anus. This pain was so great as to prevent sleep, and the woman was unable to walk or sit for any length of time because of it. She ascribed the discomfort to hemorrhoids. Some constipation existed; there was no bleeding from the rectum, nor was there any vaginal discharge. On examination the cervix was that of a multipara; some slight laceration; no particular hardening such as might point to malignant disease. There was an old laceration of the perineum of slight degree. On examining the vulva I found an ulcer on the left lesser labium and extending forward over the inner surface of the greater labium and backward slightly into the vagina. This ulcer was in shape considerably like the area of denudation in the old-fashioned Emmet's operation for lacerated perineum. It extended down through the epidermis and was surrounded by a border of what seemed to be hypertrophied epidermal tissue. The floor of the ulcer was covered with granulations, over which there was considerable secretion. In color the ulcerated surface was reddish, not so dark as a specific ulcer, the margins, as I remember them, being somewhat the color of boiled ham. Further back toward the vaginal opening a second smaller ulcer existed. The walls of this were thicker and the

¹ Read before the Section on Gynecology. College of Physicians of Philadelphia, May 19, 1898.

area of granulation much smaller. On the right lesser labium, on its inner side, there were some three or four similar ulcers, all of the same light reddish color. The patient gave a good account of her family history, there was no tuberculosis, her lungs were in good condition, but she was decidedly anemic all through her pregnancy. She stated that the disease began at the site of the largest patch, commencing as a small papule which gave great pain. This papule finally broke, leaving a small ulcerating surface which spread rapidly. The most



characteristic peculiarities of the ulcers were the intense pain and the rapidity with which they spread. In a short time the largest one on the left side united with the smaller one above it, and the combined ulcer then spread forward and downward until the perineum began to be attacked. Each new ulcer began in exactly the same manner—a puffy swelling of the epidermis, this later breaking in the centre, leaving a round ulcer which united with the one preceding it. There was no tendency to form circles as in herpes zoster.

On account of the patient's pregnancy I was afraid to remove the growths at once, especially as I could not operate in her home

and had nowhere to take her during the summer months, nor indeed would she have consented to any operation at that time. I do not think, on account of her pregnancy, that an operation would have been advisable. After having obtained a consultation with Dr. E. E. Montgomery, and on his advice, I dressed the ulcers daily with equal parts of iodoform and dried alum, creaine being first used to lessen the pain, which was decidedly severe. In August the woman was delivered of a large male child. I took extraordinary care to prevent sepsis in this case, and succeeded, for she went through her puerperal period with no abnormal temperature. There seemed to be no rise of temperature or no symptoms of septic absorption caused by the ulcers. The treatment with iodoform and dried alum seemed to act beneficially on the ulcers, and, whether from this treatment or the cessation of pregnancy, they shrank considerably and lost a good deal of their rapidity of growth after the birth of the child. In October of 1894 and in the latter part of this month the original combined ulcers had shrunk considerably, but the growth was extending slowly backward across the perineum and was nearly encircling the anus, as the photograph shows. At this time the patient desired the removal of the growths, and, as she positively refused to go to a hospital or to have the growths excised, I removed them with a Paquelin cautery, using a flat, knife-like blade. In doing this I tried to be as thorough as possible, burning away all the ulcers, both large and small; but I am sorry to say a small amount of the growth was left around the anus, because I found it extended well into the rectum, apparently above the internal sphincter, and I was afraid of destroying the sphincter. On all of this site the growth has since returned. Owing to the patient's not allowing me to incise the growth I could have no microscopic examination made of the specimens. The removal by the cautery produced instant and positive relief, which was continuous for several months until the growths around the anus began to increase and spread.

I lost sight of the patient in the latter part of 1895 and did not hear of her again until she came into Dr. Baldy's care. His notes on the further progress of the case are appended.

DR. BALDY'S REPORT.

DEAR DR. WELLS:—Early in March, 1897, Mrs. McD. came to me complaining of an ulceration on the privates accompanied with great pain and discharge. She informed me that she had

had the same trouble a year or two before and had been treated by yourself and Dr. Montgomery; that the trouble had disappeared, but had, after some months, again returned. I found her to be a woman of 43 years of age and that she had borne nine children. She menstruated regularly and had no pain at that time. There was continual leucorrhœa, evidently from an old metritis and endometritis.

She complained of the presence of an open sore, which bled and discharged a watery discharge; excruciating and continual pain at the seat of the trouble; backache, loss of flesh and strength. The trouble began as a small pimple, which broke down and gradually spread.

Examination revealed a growth raised one-eighth of an inch from the skin, papillomatous in character, with small ulcers in places, extending from the fourchette and lower third of labium majus over the perineum toward the anus as far as the edge of the internal sphincter; about two and one-half inches long by an inch and a quarter broad. The principal feature of the symptomatology was the continued steady and excruciating pain.

I made a diagnosis of malignancy and excised the whole area of the disease. As much of the wound as possible was brought together by silkworm-gut sutures; the balance healed by granulation. The healing was complete. The operation was performed March 5, 1897. Three days ago I again saw Mrs. McD. and found a condition much similar to the original one, only smaller in extent and at a point to the side of the old site and not involving it. The photograph shows the old scars on the perineum and lower part of the labium majus very well, as it does also the new area of disease to the side and lower down. I should by all means advise another excision before there is any chance for further increase in the involved area.

At the time of the operation the specimen was placed in the hands of Dr. Beyea for examination. I have asked him to send me a copy of his report, which is here appended:

DEAR DR. BALDY:—I send you a report of the specimen of tissue from the case of Mrs. McD. When I made this examination it showed nothing microscopically which could characterize it from an ordinary inflammatory process.

Pathological Examination.—The specimen was an irregularly oblong portion of tissue removed from the skin portion of the perineum, measuring 2.5 centimetres in length and 1 and 1.5 centimetres in breadth. Its macroscopical appearance was

that of a hyperplasia of the skin, somewhat resembling that of an early carcinoma of this region. Its skin surface showed a small amount of ulceration, but no distinct destruction of tissue.

Microscopical sections were made through every portion of the tissue and showed the following changes: The epidermis is distinctly thickened, with a marked extension of the papillary portions into the underlying tissue. The prolonged portions of papilla are surrounded by a very extensive small round-cell infiltration. In the deeper tissue this small round-cell infiltration gradually disappears and becomes more localized, being most and only pronounced around blood vessels. The blood vessels are distinctly dilated and the endothelial cells swollen. The lymph spaces are dilated and their endothelium swollen and changed.

Macroscopically and microscopically the disease shows nothing that will differentiate it from a simple chronic inflammatory hyperplasia, except that the small round-cell infiltration is most extensive about the blood vessels. There is not the slightest change that would lead to the belief that the disease is one of beginning malignancy. The disease is certainly not carcinoma. There are no giant cells, or epithelioid infiltration, or miliary tubercles which would allow one to conclude the possibility of a tuberculosis. The disease shows the characteristics that have been described by Veit as *ulcus rodens vulvæ*, a name that Virchow has given to these atypical ulcers the etiology of which cannot be determined. He does not include in this those cases of *ulcus rodens* which are now understood to be a form of epithelioma.

Tubercle bacilli were not stained for in this case, as the appearance of the tissue did not at the time of examination seem to me sufficient to warrant such an extensive task.

Very truly yours,

H. D. BEYEA.

My diagnosis at the time of the operation was malignancy, and in spite of the above report I am unwilling to discard that opinion. The plain, cold fact remains that the character of suffering this woman was afflicted with does not accompany simple or rodent or tubercular ulceration, and does accompany malignancy most commonly. She had continual, persistent, and severe pains in the parts, so much so that she vigorously protested against a delay of several days in her operation. I had, within one month of the time I did this operation, another patient with a similar ulceration and whose history is much more conclusive to me. She was 34 years of age and had had one child seventeen years before. Since the birth of the child she had been irregular and profuse in her menstruation. Four years before I saw her she had the uterus removed by the

vagina for cancer. Eighteen months before her visit to me she had a small wart appear on the labium, which gradually spread. At the time of her visit to me she had a large ulcerated surface extending from the fourchette on the left side of the labium majus almost to the top. The labium was greatly swollen and edematous. The pain in this case was so intense that sleep had been a rare thing for months—as she has put it since, if it had continued she “would have lost her mind.” In all respects the symptoms and appearance and progress were as in the case of Mrs. McD. The woman fairly begged for an operation and relief, so intense and continual was her suffering. The microscopic examination gave the same result as in the case of Mrs. McD.—nothing. I have seen this woman also in the past few days, and she is free from any return and the relief is complete. The operation was performed one year ago this month. I can find a history both of tuberculosis and cancer in her family. Her mother had scrofula badly—neck all scarred by suppurating glands. She herself had a cancerous uterus removed four years before I saw the ulceration.

To me, from a clinical standpoint, both these cases were malignant; pathologically they are so indefinite that the examination does not shake my clinical diagnosis.

I should most certainly thoroughly excise the new growth in the case of Mrs. McD.

Very truly yours,

J. M. BALDY.

TWO CASES OF FIBROMA OF THE BROAD LIGAMENT.¹

BY

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WHILE tumors of the broad ligament arising primarily in one of the pelvic organs are by no means uncommon, it is but rarely that reference is made to tumors of the broad ligament itself existing without involvement of adjacent organs. Of the latter class I have been able to find but five or six which resemble the two cases of the kind which I present to-night.

The first of these tumors is a spherical mass six inches in diameter, removed from a patient in 1892. At the time of the

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, May 19, 1898.

operation I imagined that it was probably a fibrosarcoma, but as the woman is living and in good health six years after the removal of the growth I think that there could have been very little if any sarcomatous tissue present.

This other tumor, the second of this kind which I have removed, is peculiar in that it is a pure fibroma and without attachment to either uterus, ovary, tube, or round ligament; no fibres could be found running to any of these organs. Among the few cases reported which resemble this was one by Boussi,¹ originally diagnosed as a fibroid of the uterus, and which was treated by eschars placed over the sacrum and by use of morphine hypodermatically. The patient survived this treatment for five months, and an autopsy showed the presence of a growth of the broad ligament, without other attachments, the size of an infant's head. Duncan² reports the occurrence of bilateral myomata of the broad ligaments; Gross,³ of Nancy, removed a single tumor of this nature weighing 2,500 grammes; Polosson⁴ mentions a case similar to mine, but of smaller sized tumor. All these tumors seemed, according to their reporters, to possess a uterine pedicle. Praeger,⁵ of Los Angeles, reports two cases of fibromyomata, the first of the broad ligament, separate and distinct from the uterus, but pushing it out of its position; the second removed ten months after salpingo-oöphorectomy, and in this case a large excess of fibrous tissue was found. Cullingworth⁶ reports a case, in which the uterus and appendages were normal, from which he removed a fibroma of the broad ligament weighing 7 pounds and 5 ounces and measuring $8\frac{1}{2} \times 7\frac{1}{2} \times 6\frac{3}{4}$ inches. The growth had a short, narrow pedicle attached to the posterior surface of the broad ligament half an inch to the inner side of the ovary, and was entirely without adhesions to the uterus, ovaries, ligaments, or tubes; in this respect it resembles my case very closely.

The very best description of these tumors is given by Vautrin.⁷ He thinks they originate in the shining fibres of the broad ligament near the uterus. A tumor reported by him took its origin from the inferior internal part of the broad ligament near the uterine vessels and the lower segment of the uterus, and possessed thick, shining muscular fibres running to the anterior and posterior base of the uterus. It weighed over seven kilogrammes and had no attachment to the uterus. This writer also quotes Bushman's descriptions of cases of this kind reported by Billroth and by Rydygier; these tumors weighed 18 and 15 kilogrammes respectively. The tumor

reported by Sanger and by Schmidt weighed 8 kilogrammes. Henly and Luschka take the ground that the shining fibres near the uterus spread themselves through the folds of the broad ligaments, the lower part of which contain many muscular fibres, blood vessels, and lymphatics. The tumor which I removed measured $8 \times 7\frac{1}{2} \times 4\frac{3}{4}$ inches and was apparently entirely in the broad ligament. It had no attachments to either uterus, ovary, tube, or round ligament, and I could not discern the smallest fibre running to these organs. It had developed in the lower part of the broad ligament where the blood supply is most abundant. It had pushed up the broad ligament, and stood out in plain relief when the abdomen was opened. The growth was removed without difficulty, and it was found that the body of the tumor proper did not approach within $1\frac{1}{2}$ to 2 inches of the uterus, the tube and ovary being a considerable distance below. The growth was covered solely by the broad ligament, and its pedicle was composed of the broad ligament and the vessels which came from about the insertion of the uterine artery. I tied off the long, broad pedicle, measuring $4 \times \frac{3}{4}$ inches, with a cobbler's stitch, then placed a single figure-of-eight ligature around it below the first ligature, leaving a stump no larger than the end of my finger. This tumor had been growing for nine years. The patient, a married woman 41 years of age, had borne her last child about twelve years ago and had not been pregnant since the growth was first noticed. Nine years ago she noticed a lump about the size of an egg in her left groin, and within the space of seven years and a half this lump had developed into a mass occupying almost the entire portion of the abdomen below the umbilicus. When I began the operation I expected to do a hysterectomy. There was one point in my mind—the limited movement of the uterus when bimanual examination was practised—which made me think that the tumor was not attached to the uterus. The reason for this limited movement was that the broad ligament enveloped both the uterus and the growth. As to the nature of the tumor, the pathologist failed to find any traces of malignancy in it, pronouncing the growth a pure fibroma. I thought it worth while to report this case as one of the few which apparently originate from those muscular fibres which abound in the lower part of the broad ligament. Almost all cases cited in the literature on the subject as tumors of the broad ligament show evidence of having originated either in the uterus, ovary, round ligament, or tube, and the great majority of such cases

show evidences of malignancy. The case just recited shows neither.

633 ARCH STREET.

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A CASE OF RETAINED OVUM.

BY

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Park Ridge, N. J.

THE presentation of this case is not intended to bring something new before the profession, but to add to the already existing but not abundant literature on this subject a case presenting several noticeable features. I was called, in the early part of the evening of December 21, 1897, to see Mrs. D., age

41 years, who had engaged me to attend her in confinement in the following April. On my arrival I learned that she had been taken with a hemorrhage while on business in a neighboring town about ten miles distant. Her husband, who was with her at the time, procured a carriage and removed her to the railroad station and, as soon as possible, to her home. When I arrived I found the hemorrhage moderately profuse but not severe. There was little or no pain. The patient, who was a multipara, thought she had felt slight movements of the fetus for several days previous. Examination showed the uterus as large as at four or five months pregnancy, the cervix undilated, and no indications of labor. Believing an abortion imminent, a warm douche of a solution of bichloride of mercury 1:4000 was ordered, to be repeated in four hours and thereafter every six hours, the patient to be kept quiet in bed; and having instructed the husband—a very intelligent gentleman, who had formerly been a professional nurse—how to insert a tampon, I left the case for the night, to be called if necessary. The next morning I found the hemorrhage somewhat diminished, no pain and no change in the condition of the womb, and, except for a feeling of weakness, the patient in a comfortable condition. From this time on the hemorrhage gradually decreased and in ten days had ceased and she went about the house as well as usual. I was in some doubt about the nature of the case at this time—whether to consider it a missed abortion, or as an intrauterine growth with some freak of Nature, due to a possible approach of the menopause. On January 28, five weeks after the beginning of the attack, I made a careful examination and found no apparent change in the condition, the uterus being as large as at four months pregnancy, but feeling soft, relaxed, and doughy. On introducing a speculum a deep erosion, probably an inch in diameter, was found on the cervix. General health continued good. The erosion improved rapidly under treatment. On March 7, 1898, Mr. D. came to me about 3 o'clock in the morning and told me his wife had been taken with hemorrhage and severe pain, and requested me to prescribe for her and visit her early in the morning. I prescribed a mild anodyne, and advised him to insert a tampon if the hemorrhage became profuse before my arrival, which he did as soon as he returned home. On my arrival at 7 o'clock I found the hemorrhage had been very effectually restrained by the tampon and the pain had subsided soon after its insertion. On removing the tampon I found in the vagina a fetus about

five inches long, very much shrivelled and macerated, and resembling a mummy in appearance. The hemorrhage being moderate and very little pain, the antiseptic douches were resumed as in the previous attack. There was no odor or fever. During the next three days several irregularly-shaped masses passed with slight pains. They were evidently blood clots that had been retained in the uterus since the other attack. They had contracted to a considerable degree of firmness, were of a pale tan color, and resembled leather in appearance. Her condition remained about the same, the hemorrhage being little more than in normal menstruation. No temperature or other abnormal symptoms developed until the evening of the fifth day, when the temperature reached $99\frac{3}{4}^{\circ}$, although she felt perfectly well with the exception of a slight headache. Careful examination of the interior of the uterus with the finger revealed a mass slightly movable and well up in the corpus. The next morning the temperature had fallen to 99° , but I thought it desirable to empty the uterus, so passed, with proper antiseptic precautions, a large dull curette between it and the mass until a secure hold had been secured, when a mass measuring about $2\frac{1}{2}$ inches long by $1\frac{1}{4}$ to $1\frac{1}{2}$ inches wide and a half to three-quarters of an inch thick was withdrawn without difficulty, although causing severe pain. The mass was evidently the placenta, which had no doubt been separated at the first attack of hemorrhage two and a half months previous and had undergone a decided metamorphosis. The anterior surface was covered with membrane, very dark in color, the ragged edge of the fetal sac appearing to have been recently ruptured. The posterior surface and edges were not covered with membrane showing the uneven and rugged surface of separation from the uterus, but the whole corpus was converted into a dense, white, glistening mass resembling adipocere in appearance. Recovery was rapid and uneventful, and subsequent health perfect. Menstruation appeared in about one month.

The noticeable features of the case are:

1. A probable complete separation of the placenta at the time of the first attack, without labor pains or serious hemorrhage.
2. The cessation of the hemorrhage without a discharge of any kind remaining to indicate the presence of anything abnormal in the uterus, and the retention of the blood clots and the expulsion or absorption of the serum and coloring matter until they resembled pale leather in appearance.

3. The good general health of the patient.

A considerable number of cases of retention of the entire ovum have been recorded, but I have found none, in the limited amount of recent literature to which I have had access, in which a considerable quantity of blood clots was also retained. Graefe¹ collected fifty-nine cases from current literature, to which he added eleven of his own cases, and a careful study was made of the changes that take place in the fetus and the placental tissue, etc. Perret² relates a case in which one of a twin pregnancy died at seven months, but was retained until term and delivered in a macerated condition but undecomposed, the other twin being in a healthy condition. Dr. David Moss³ relates the case of a woman with twin pregnancy who at five months had a severe fright, which was followed by a profuse hemorrhage for three days and a slight yellowish discharge for some time longer. At term a fetus, apparently about five months old and much deformed by pressure, was first delivered, and subsequently, after a severe labor, a healthy female child. The *Journal of the American Medical Association*, vol. xxiv., p. 1095, contains an abstract from the *Gazette médicale de Liège*, April 30, 1896, of a case in which the fetus died at the fifth month, and, three months after, the woman entered the hospital for mechanical delivery. Nothing was done save the administration of six grains of salicylate of soda daily for five days, when labor came on and natural delivery ensued. Dr. James Oliver, F.L.S., F.R.S.,⁴ reports four cases occurring in his own practice. In Case 1 the fetus died at four and one-half months. There was some discharge for two weeks, which then ceased until labor came on and expelled the fetus at two and a half months after its death. The placenta was hard and cup-shaped. In the second case the fetus died at five and one-half months from the effects of an epileptic seizure. There was no hemorrhage or discharge, the patient being in usual health until the expulsion of the ovum *en masse* three months after its death. In Case 3 a fetus of from four to six weeks was retained for four months after its death, with no other symptom than occasional slight hemorrhage, and was expelled spontaneously and intact, the fetal sac containing an embryo one and one-half inches long and one and one-half ounces of a dark, greenish fluid. The fourth case was the

¹ AMERICAN JOURNAL OF OBSTETRICS, vol. xxxv., p. 291.

² L'Obst., May, 1897.

³ Lancet, May 7, 1898.

⁴ British Medical Journal, June 12, 1897.

retention of a three to three and one-half months' fetus for five months. There was no hemorrhage until three months after the supposed death of the fetus, after which there was a slight daily discharge until a light labor pain expelled the mass. Other references might be noted, but the above is sufficient to illustrate the character of this peculiar and interesting class of cases.

TRANSACTIONS OF THE SECTION ON GYNECOLOGY OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, May 19, 1898.

R. C. NORRIS, M.D., *in the Chair.*

DR. JOHN B. SHOBER read a paper entitled

THE USE OF MAMMARY GLAND IN THE TREATMENT OF
UTERINE FIBROIDS, AND OF PAROTID GLAND FOR
OVARIAN DISEASE.¹

DR. JOHN C. DA COSTA.—I congratulate Dr. Shober on the improvement he has had in his cases with the treatment of fibroid by mammary-gland extract. I have had no experience myself, and can, therefore, say nothing positively about it. Some of the symptoms he spoke of—pain and diminution in tumor—we get from other articles, notably from ergot. After exhibition of a good sample of ergot we often have a diminution in size of the tumor, and pain in the tumor often resembling labor pain; but that diminution does not remain, as he states it does after the exhibition of the mammary gland extract. These fibroids enlarge and diminish, from what cause we do not know—possibly from relaxation of fibres in one case and contraction in the other. I have used thyroid extract. Dr. Slocum suggested using it in fibroid tumor of the uterus. I have three cases of large fibroids of uterus under treatment, reaching nearly to the umbilicus in each case, none of them smaller than a good-sized head—cases which positively refused operation; they are all of them cases in which hysterectomy ought to be done. As all positively refused operation, the next thing was to try some other means to relieve them. I began on thyroid extract. I noticed an improvement in all of these cases; in the first place, in the mobility of the tumors. Two of them were wedged down in the pelvis, pressing on the rectum and bladder, interfering with defecation and micturition, and seemed firmly attached through the abdomen. After treatment with

¹ See original article, p. 352.

the thyroid extract these tumors became perceptibly much more movable. This may be only a coincidence and may not be due to the administration of the gland. Two of the cases are in the full tide of menstrual life; the third has just passed the menopause. Of the two in full tide of menstrual life, in one the menstruation was slightly irregular, lasting but two or three days, and with excessive pain and excessive faintness during the period. Menstruation now lasts five or six days, is full and free, and she has no pain. The other one was excessive in flow, so that I expected malignant disease. She has come to normal menstruation of five or six days. In all my observation there has been a marked temporary diminution in size and increase of mobility. There is one symptom I have noticed in the administration of thyroid extract: each case has thinned down, one slightly, one of them lost flesh very fast, and the other in a medium degree. In two of the cases it was also attended by excessive dizziness and with a tendency to falling. That is when I gave the thyroid extract alone, the dose being three grains of extract. I then mixed one-quarter of a grain of *nux vomica* with it, and the tendency to faint and fall disappeared.

DR. SHOBER.—I reported these results for what they are worth, without attempting to theorize upon them. I agree with Dr. Da Costa in thinking that the mammary gland seems to act very much as ergot does in causing contraction of the uterine muscle. I think we will find that it will be useful in certain forms of disease associated with menorrhagia and metrorrhagia, and will be used very much as ergot is used for these conditions. A report upon the influence of the thyroid gland in fibroids of the uterus is to be made next week in Boston at the meeting of the American Gynecological Society. I have not attempted to use thyroid gland in fibroid of uterus, for the simple reason that I saw sufficient indication for the use of mammary gland, and I have not had enough cases to use both. I think that the thyroid gland is a dangerous drug to use in the usually prescribed doses. I have noticed great depression of spirits, palpitation of the heart, and a certain influence upon the circulatory system, which is alarming at times. I have used thyroid gland with some success in cases of young married women who were sterile, who suffered with profuse dysmenorrhea; but I am always careful to employ it in very small doses. The subject is a very interesting one and requires a great deal of experimentation. In regard to the use of parotid gland in ovarian disease, I can only say that I have been favorably impressed with the results obtained. I realize the fact that no conclusion can be drawn from such a limited number of cases.

DR. JUDSON DALAND read a paper upon

PULMONARY EMBOLISM FOLLOWING HYSTERECTOMY.

DR. C. P. NOBLE.—Fortunately none of us has a large

experience with embolism after operations, as otherwise our statistics would be badly affected. I have had some experience. One of sudden ending was a case in which I did nephrorrhaphy. She had Bright's disease and was known to have it when operation was done, but nevertheless it was thought wise to operate. The patient, after being reasonably well for several days, the only symptom not being entirely favorable, consisting in a somewhat irregular pulse, suddenly sat up in bed, gasped for breath, and was dead. In that case I thought the cause of death was embolism. There was no autopsy, and the diagnosis was open to question. It may have been a case of heart failure. I recall another case in which it is possible the trouble was a phlebitis wandering about the body instead of emboli. In this case I thought an embolus blocked up a branch of the pulmonary artery. In another case I did hysterorrhaphy. She had a septic, irregular temperature. First one part of the body and then the other would become involved, including the left leg and some of the intra-abdominal vessels in the right half of the abdomen. The patient recovered. I think there is one class of cases in which we have small septic emboli in the lungs, and these are the cases said to die of pneumonia after operation. The lungs become infected through small emboli and the case goes on to fatal termination. I have had three or four such cases in my entire work. The last case was a patient who had the cervix curetted for cancer some three or four weeks ago. The apparent pneumonia was a septic pneumonia due to infection. I think there are three classes of cases which we meet with: cases of undoubted embolism, those which are somewhat allied to phlebitis attacking different parts of the body, and, last, the septic cases which develop so-called pneumonia. It is universally recognized that feeble patients are most apt to develop emboli. The cause of the anemia usually cannot be reached without the operation, therefore it is difficult to cure the anemia before operating. These cases are most often cases of fibroid tumor where the hemorrhage is excessive and where it is difficult or impracticable to arrest the bleeding until the cause is removed. At times we can arrest it by palliative measures and postpone operation until patient is improved. Frequently, in extrauterine pregnancy or cancer cases where anemia is marked, it is impossible to postpone operation, as that is the only means of cure.

DR. H. D. BEYEA.—I am particularly interested in this subject of pulmonary embolism in relation to gynecological abdominal operations. During the last four years I have seen three such cases. One followed a hysterectomy for a good-sized fibroid tumor, another hysterectomy for a large pelvic abscess, and the other a ventrosuspension. In the last case there was a small fibroid tumor in the fundus uteri. I have looked up the literature on the subject to a considerable extent. Most of the cases which have occurred have been collected and reported by Gessner in a monograph entitled "*Ueber tödtliche Lungenembolie bei gynäkologischen Erkrankungen*," Berlin, 1896.

Among the twenty cases he collected and reported, in eight the gynecological disease was a fibroid tumor; the others I think were usually long-standing ovarian cysts or long-standing inflammatory disease. He noted that during the time he was particularly looking for pulmonary embolism as a cause of death seven or eight cases were found in one clinic. Gessner concluded that many cases had died of this cause before, but at the postmortem pulmonary embolism was probably not looked for. The cases I have seen were not like the one reported by Dr. Daland. One woman was 42 years of age. The hysterectomy was performed for fibroid tumor. There was no heart disease preceding operation. For three or four days after operation she did well, then the pulse became rapid, going up to 140, increasing in frequency during three or four days to 170 or 180, then under treatment it slowly came down to 90. Then the pulse again suddenly became rapid, she was suddenly taken with heart failure and shock, and the pulse a second time reached 170, and then again she began to improve, when, while being turned on her side in bed, she suddenly died. The post-mortem showed a large embolism of the left pulmonary vein. Fleischlen reported a case similar to this one. The embolism followed three weeks after a hysterectomy for fibroid tumor. She was taken with pain in the lower abdomen, followed by pronounced shock, then a rise of temperature, increase in the respiration, and the development of a cough with bloody expectoration. She slowly recovered from this attack and returned to her home. Five weeks after operation she suddenly fell from a chair, going into a condition of shock. She slowly reacted and, after being in bed for several weeks, became well. This patient also had no cardiac lesion. Fleischlen believes that embolism results from a dilatation of the veins of the broad ligament. The other two cases I saw got well. In the one with the large abscess the embolism occurred about sixty hours after operation and a few hours after I had removed a gauze drain. I was called to see her at 5 o'clock in the morning. I found her in a condition of shock and almost pulseless. She slowly improved under hypodermatic stimulation, and two days later developed a cough and bloody expectoration. I have seen, a number of times after hysterectomy for fibroid tumor, the pulse suddenly reach 140 or 170 and the patient go on and get well. I remember one patient this year who had done well up to the fourth day. The nurse had taken the pulse at 11 o'clock. She found it to be 100. I came into the ward at 11:30 o'clock and found the pulse 145 and very feeble. The patient went on for three or four days improving not a little, the pulse reached about 90, and then she suddenly died. This patient also had a large goitre. I thought this case was probably an instance of undeveloped Basedow's disease, and for this reason the heart was weakened. Martin says he has noted such cases of heart and circulatory disturbance in patients having a fibroid tumor for some time. He has found a marked diminution in the hemoglobin in such cases. In the cases I have observed,

both of pulmonary embolism and rapid heart after operation, the pulse before operation had been twenty or more beats more rapid than normal. In a paper recently published by Strassman and Lehmann regarding the pathology of fibroid tumors, they found that of 71 cases of fibroid tumors treated at the Charité Hospital Clinic of Berlin, 29 (34 per cent) had some form of heart disease. The heart disease was usually dilatation of the right ventricle, less frequently dilatation of the left ventricle, and in a large percentage there were undoubted symptoms of angina pectoris. They called attention to the fact that heart disease is very often found with fibroid tumors. It is known that fatty degeneration and brown atrophy of the heart is not infrequently found. One observer in the Dresden Society stated that all patients having fibroid tumors always had associated heart disease. In the case I referred to as dying this year, I had the heart studied for degenerations, segmentation, and fragmentation, but without result. The patient did not die of sepsis. She died on the seventh day after operation, and at the postmortem there was not the slightest sign of peritoneal irritation. The temperature never went above 100° or 101° F. There certainly seems to be some peculiar relation between the fibroid tumors, the heart, and the circulatory system. As in pregnancy, the heart may be influenced, here the irritation being kept up for a much longer time. Anemia is certainly a factor and may cause fatty degeneration of the heart and predispose to embolism. I think dilatation of the veins of the broad ligaments may have something to do with it. I do not think we are able at the present time to explain the actual cause in any case. The condition of thrombosis of the femoral vein after hysterectomy, ventrosuspension, or even curettement, has never been satisfactorily explained, although it occurs rather frequently. Gessner found in a few of his cases changes about the blood vessels, a phlebotic change, but I believe this cannot be true. Where there is anemia, history or presence of heart disease, or the pulse is 90 before operation, in particularly fibroid tumors, the patient should be kept in bed for at least a week and treated for a week before operation.

DR. DALAND.—From a diagnostic standpoint it seems to me that cases of sudden pain occurring at the fifth, seventh, or tenth day, coming in the midst of apparent complete convalescence, should raise the question of pulmonary embolism. Gessner's paper is an admirable one. He has worked out the question satisfactorily. He reported twenty cases of pulmonary embolism and found myocardial changes in ten. It seems there is an unknown relation existing between uterine disturbances—as fibroma of the uterus, for example—and the circulatory system. The changes are frequently fatty degeneration, and that is in line with the case reported this evening. Regarding the occurrence of rapid pulse in pulmonary embolism, there seems to be a difference of opinion. A great many cases present unusual frequency of pulse rate without corresponding change in temperature or respiration. This is also

true after the attack. The pulse rate in the case reported followed rather closely the temperature curve. Sometimes with a normal temperature the pulse rate has been 100 or 120. Mahler dwells upon the importance of the diagnostic value of rapid pulse rate in this condition. It has occurred to me since reading the paper that, inasmuch as increased coagulability occurs in gout, and that this disease is favored by taking large quantities of nitrogenous food, this would be an additional argument in favor of over-feeding where we have conditions in which the blood does not coagulate normally. I must insist upon the duty that the gynecologist owes his patients in advising preparatory treatment in cases like the one reported to-night. I think it is essential in cases where there is a weak heart and where the blood is impoverished. Such patients incur an unnecessary risk if operated upon without preparatory treatment. I can understand that sometimes it is impossible to relieve the condition of the cardio-vascular and blood condition, because of hemorrhage or pain that so frequently causes and maintains the state of ill-health.

DR. JOHN C. DA COSTA read a paper upon

TWO CASES OF FIBROMA OF THE BROAD LIGAMENT.¹

DR. H. D. BEYEA.—It seems to me that this is a particularly interesting form of tumor. I think, like fibroid tumors of the uterus, its origin is difficult or impossible to determine. Fibroid tumors of the uterus are thought to have their origin in some degenerative change in the blood vessel walls, and perhaps this tumor may be explained by a similar change in the blood vessels of the broad ligament. According to Recklinghausen, fibroid tumors may arise in the glandular tissue, the remains of the Wolffian duct. There is no reason why such a tumor should not develop from this fetal structure in the broad ligament. I know of no other tissue here from which such a tumor could develop. At this distance the tumor looks much like a sarcoma, for there are not the regular nodules which are seen in fibroids. A point which assists in the macroscopical diagnosis of fibroid tumors is the formation of whorls or strata in the cut surface.

DR. C. P. NOBLE.—If the tumor is a fibroid tumor one method of origin is that at times such tumors are thrown off from the uterus, in some cases into the broad ligament, and become entirely disconnected from the uterus. That would be a possible explanation. In such cases the tumor derives nourishment from adhesions. I saw one case where the ovary had become detached and rolled up in omentum. There is no doubt this change does occasionally take place.

DR. J. C. DA COSTA.—It is so common for us to meet small tumors rolling about in the abdomen that I do not think it worth while to mention it. Dr. Noble says if it is a fibroma; Dr. Beyer also says if it is a fibroma. It presented the macro-

¹ See original article, p. 375.

scopic appearance of fibroma, slightly nodular. I have taken out many fibromas, and I thought it was one. Not satisfied with that, I sent it to a pathologist. His report is that "sections made from the nodular area showed typical fibrous tissue, with the peculiar wavy, concentric arrangement peculiar to fibroma. Sections made from the pedicle showed some areas of connective tissue, while others were typical fibroma." I do not pretend to be an able pathologist, so I sent it to one who is. I base my statement that it is a pure fibroma on his microscopic report. These tumors are very rare. Some people say, "I have never seen one, therefore I do not believe it." I examined carefully, and there were no tissues in the pedicle running to other organs. If there had been strands they should have been found in the pedicle of the tumor to connect the fibroma with other organs.

DR. WILLIAMS presented a paper written by DR. BALDY on
A CASE OF PRIMARY ADENO-CARCINOMA OF THE FUNDUS
UTERI.¹

DR. J. M. BALDY and DR. W. H. WELLS reported
A CASE OF RECURRENT VULVAR GROWTH.²

DR. H. D. BEYEA read a paper upon
A CONTRIBUTION TO OUR KNOWLEDGE OF CHRONIC
INFLAMMATORY HYPERPLASIAS OF THE VULVA.³

DR. WELLS.—I think the paper read by Dr. Beyea is very interesting, and the symptoms there recorded are very much like our case, except the intense pain. That is the one distinguishing feature. He seems to lay considerable stress upon the lack of pain in his case, whereas our case had the most excruciating pain. Lately there has been some slight hemorrhage from the rectum. The patient complained for a while of some leucorrhœal discharge; I asked her to note where the discharge came from, and she said she thought it came from the ulcer and not from the vagina or uterus. As to the diagnosis of the case I am somewhat in the dark. My own personal opinion, as against that of Dr. Baldy, who apparently believes it is malignant, is that I think it is probably tubercular; but that is simply a surmise on my part, and I cannot prove it so far by any pathological test, although I intend to make an attempt at it later. It does not resemble any form of tuberculosis or lupus such as I have seen or read of in any book or journal on the subject.

DR. BEYEA.—It seems to me impossible for this to be carcinoma. The patient has had this condition since 1894, and it is now not larger than a quarter of a dollar. It has not progressed, and has not been destructive enough for carcinoma. Microscopic examination shows that carcinoma is out of the

¹ See original article, p. 345. ² See p. 370. ³ See p. 315.

question. I think it is one of an undetermined ulcer, the etiology of which is not known. It may be lupus; it seems more probable they are lupus. They may be tubercular, due to some toxins carried to the tissues. This will not be explained until more cases are seen. The disease is extremely rare. Most of the cases were reported years ago, at a time when a microscopic examination, Koch's tuberculin, and the presence of tubercle bacilli were not considered.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of December 17, 1897.

The President, T. C. SMITH, M.D., in the Chair.

DR. E. L. TOMPKINS read a paper entitled

HYSTERICAL ERUCTIONS.¹

DR. J. R. BROMWELL asked if this condition might not be due to a spasmodic closure of the pyloric orifice. He spoke of a patient who was very much improved by causing her to stop swallowing air, and of another case that had continued for eighteen months or two years and in whom was found a large fibroid of the uterus. That patient recovered after the menopause, the tumor having disappeared. Pepper mentions the emotional neuroses and swallowing air.

DR. A. F. A. KING said that among the remedies spoken of by the essayist valerian had only been mentioned once. He said this is the remedy above all others. Bromides, hyoscyamus, etc., do no good. Fluid extract of valerian, given in teaspoonful doses three times a day, is the very best for hysterical patients. The swallowing of air is quite different from the flatulence of fermentation. Dr. King cited a case of hysteria where the distension of the intestine was so great that it looked as if it must burst, but it disappeared in a little while, not by eructation, but by absorption.

DR. G. B. HARRISON said musk is more valuable than valerian in these cases, but it is more expensive. The compound elixir of sumbul is good.

DR. S. S. ADAMS said these cases are a gigantic nausea to treat. He cited the case of a lady, 25 years of age, in good health, until last summer she had an attack of gastro enteric catarrh and developed the habit of swallowing air. He was called suddenly to see her and found her blue in the face and

¹ See original article, p. 362.

erectating very rapidly. She was not bloated. She complained of being weak and frightened. The pulse did not vary and there was no expression of suffering.

DR. H. L. E. JOHNSON said these cases are rare. The first case he had seen was at the Columbian Hospital; she belched wind all night and disturbed the other patients. This continued more than a month. Valerian did no good. At the suggestion of Dr. Murphy she was given a sixth of a grain of iodoform and was immediately relieved. Dr. Johnson cited the case of a woman who had a fibroid tumor of the uterus, who only belched when influenced by some emotion. She did not swallow the air.

DR. G. B. HARRISON said he wished to emphasize what Dr. Barker had said, that the valerianates were not the valerian.

DR. J. R. BROMWELL mentioned a case where bromides, hyoscyamus, and valerian did no good, but a compound of spirits of lavender, spirits of ammonia, and spirits of ether effected a cure.

DR. JOSEPH TABER JOHNSON said the only case he had seen was a case of floating kidney. This patient belched so much that she would not go out from home. She was relieved by stitching up the kidney. Eructations of gas from the stomach are mentioned in the books as a symptom of this malady.

DR. E. L. TOMPKINS closed the discussion by saying that his patient did not belch during sleep; any form of emotion, such as seeing an accident, brought on an attack. He gave the valerianate of ammonia with no effect, but did not give the fluid extract.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY.

TWENTY-THIRD ANNUAL MEETING, HELD IN BOSTON, MAY 24, 25, AND 26,
1898.

The President, PAUL F. MUNDÉ, M.D., in the Chair.

Second Day—May 25.¹

BACTERIA OF THE VAGINA AND THEIR PRACTICAL SIGNIFICANCE. BASED UPON THE EXAMINATION OF THE VAGINAL SECRETION OF ONE HUNDRED PREGNANT WOMEN.

DR. J. WHITRIDGE WILLIAMS, of Baltimore, read this paper. He said that the first work on bacteriology of the vagina was done in 1887, and the statement had then been made that the vagina does not contain organisms which are capable of giving rise to puerperal septicemia. Since then there had been many contributions to the subject, some confirmatory of this opinion and others opposing it. One extreme

¹ Continued from p. 280, August JOURNAL.

advocate of autoinfection examined the vaginal secretion in 29 cases and found pathogenic staphylococci and streptococci in over 40 per cent. In 1892, as a result of examinations of 195 women, it was found that the normal vaginal secretion could be divided into two varieties. In one it is white curd-like and very acid, and contains epithelial cells and a long, thick bacillus called the "vaginal bacillus"; this occurred in 55 per cent of the cases. In the other 45 per cent the secretion varied in character from a thick, white fluid to a yellowish-green, purulent fluid containing epithelial cells, leucocytes, and various forms of bacteria. In 10 per cent streptococci were found; in other words, this observer believed autoinfection to be possible. This work was confirmed by Burkhardt and also by himself. In two years more Koenig reported the examination of 100 cases, and stated that no matter whether the vaginal secretion is normal or pathological, it contains no organisms which are able to give rise to septicemia, and that, therefore, autoinfection is impossible, and that for all practical purposes the vagina may be considered to be sterile. In the following years other conflicting reports appeared. Last year Koenig published another series of 165 cases which confirmed his former conclusions.

Dr. Williams said that in his cases he did not find a single streptococcus or staphylococcus aureus. He found, however, the white skin coccus as a contamination, and in a number the gonococcus. The differences in the results, he said, were entirely due to the differences in technique. Those obtaining positive results did so by introducing a speculum and taking the secretion with a platinum needle. But the introduction of such a large object as a speculum carried in past the hymen the organisms which were lying at the entrance to the vagina. To obviate this he had used a small scoop, and had introduced it after having separated the hymen widely so as to avoid contact. As a consequence organisms were not introduced from without, and no pathogenic organisms were introduced into the vagina. This seemed to him an adequate explanation of the conflicting reports.

The following are Dr. Williams' conclusions:

(1) He agreed thoroughly with Koenig that the vaginal secretion does not contain pyogenic streptococci or the staphylococcus aureus, and hence the use of vaginal douches is unnecessary, and in many cases is even injurious. (2) The discrepancy in the statements of the authors is due to variations in technique. Those who have used the speculum have gotten positive results; those who have used small tubes and have avoided carrying in external germs have obtained negative results. (3) As the vagina does not contain pathogenic streptococcus or staphylococcus aureus, autoinfection with these organisms is impossible, and if they are found during the puerperium they have been introduced from without. (4) If the vagina contained streptococci frequently, vaginal examination with the sterile finger would be very dangerous, which is not the case. (5) The

vagina may occasionally contain bacteria, which may give rise to sapremia by autoinfection, usually not severe. (6) Death from puerperal infection is due to infection from without, and is usually due to neglect of aseptic precautions on the part of the physician and midwife.

DR HUNTER ROBB, of Cleveland.—I wish to congratulate Dr. Williams on the report of his interesting work. I agree with him entirely that errors in technique are largely responsible for the contradictory results that have been obtained by the various investigators in this line of work. Recently, in reading some work reported by Immerwahr and Gottschalk, I was surprised to find that these investigators had used strong solutions of bichloride of mercury to disinfect the parts close to the site from which the inoculations were made; for example, before taking cultures from the vagina the external genitalia were cleansed with a strong solution of bichloride, and, in like manner, when taking cultures from the cervix the vagina was cleansed with a strong bichloride solution. This, to my mind, affords room for serious error, inasmuch as the inhibiting powers of the bichloride cannot be excluded under such circumstances, since some of it could very easily be carried over into the culture tubes. We were able to demonstrate this very conclusively in some work that we carried out in Dr. Kelly's clinic in the Johns Hopkins Hospital some years ago, in which we took cultures from the pelvic cavity with the drainage tube in place. We cleansed the drainage tube with a weak solution of bichloride of mercury, and then inserted down it a piece of gauze which had been moistened in a 1 : 5000 solution of bichloride of mercury. After making inoculations under such circumstances we were never able to obtain any bacterial growths. In another series of cases, in which no bichloride was used in the drainage tube, but very careful aseptic details were carried out, we were able to obtain growths from the inoculations in about 44 per cent of the cases. The difference in these results was due, in all probability, to the fact that in the first series of cases a certain quantity of the bichloride had been carried over into the culture media and had inhibited the growth of the organisms.

DR REYNOLDS said that he had no doubt that puerperal infection, like most surgical infections, is introduced almost invariably from without, and he could not help believing that our antiseptic cleansing of the field of work is directed against the possibility of infection in a few rare instances. As practical surgeons, however, we could not allow a laboratory demonstration of the innocuousness of the vaginal secretion to justify us in acting as though that innocuousness were a certainty, until it had been backed up by abundant clinical observation. The tissues of the parturient canal, the conjunctiva of the infant, and, in our surgical work, the peritoneum of the mother, might be exposed to infection by the unreserved acceptance of this dictum of the laboratory. The parturient canal after labor is the only instance in the human economy in which Nature is

enforcing a rapid retrograde process and in which she is herself absorbing a large amount of effete material. He could not believe that those tissues absorb septic matter as does the peritoneum. He was of the opinion that it was unsafe to drop all antiseptic cleansing before labor, in order to protect what he believed to be the less vulnerable tissues of the parturient canal as strictly as one would protect the more vulnerable tissues of the peritoneum.

DR. CHARLES JEWETT, of Brooklyn, said that it would be a great satisfaction to obstetricians and gynecologists if they could rest securely on the conviction that the vagina is aseptic in parturients. If Dr. Williams could assure us that it had been sufficiently established that the use of antiseptic injections before labor inhibits and arrests the natural protective secretions of the vagina, they should certainly be discarded; yet a goodly proportion of obstetricians still consider it necessary to use some preliminary antiseptic in the vagina as well as outside of it. It had been his practice for some time to use no antepartum or postpartum douche in obstetric cases, and even in operative cases he had adopted this plan if the vagina were healthy. When the vagina is diseased it is better to use some agent, such as a two per cent lactic acid solution, for two weeks beforehand.

DR. HENRY D. FRY said that he had recently had some culture tests made of the vaginal secretion after labor in about fifty women. These women had had slight elevations of temperature after confinement. In these examinations the streptococcus and the staphylococcus aureus were not found in a single case; the staphylococcus albus was found alone thirteen times and once with the colon bacillus. The gonococcus was found once.

DR. R. L. DICKINSON, of Brooklyn, said that he wished a method could be found that would minimize the danger of infection by contact with the vulva in making a vaginal examination. Of course the hospital practice was to clip the hair and scrub the external genitals with gauze, and to spread apart the labia with the other hand in order to protect the examining finger from contact with these parts. These measures were useful, but far from complete and satisfactory, yet he saw no way of improving them materially without resort to anesthesia.

DR. P. A. HARRIS said that if the vaginal examination were entirely refrained from in obstetric practice he did not think more deaths would occur than now result from infection introduced by these examinations; indeed, he did not think there would be so many deaths. We had been altogether too officious in this matter of vaginal examination, which was largely one of pretension.

DR. H. A. KELLY said that Dr. Williams had very clearly demonstrated some important facts. The infections might be conveniently divided into two classes—viz., those from without and those from within. The latter class might, in the present

instance, be considered to be those coming from the vagina. This investigation would doubtless result in stopping a good deal of meddlesome and hurtful practice. We should not forget, also, that such meddlesomeness interferes with the natural protective action of the vaginal secretions. Zweifel has reported a case of fatal septicemia in which the only possible source of infection was a slight suppuration in the cornea of one eye. It was important, therefore, to know accurately all about the condition of the patient's body, and to warn her about the danger of introducing her finger into the vagina for any reason. The physician and nurse should also remember that it is extremely dangerous to go directly from a septic case to an abdominal operation or to a confinement, no matter how many efforts have been made to sterilize the hands. For poor patients he would suggest the use of an obstetric pad, which can be readily kept clean, particularly after labor.

DR. HANKS said that the practical point in the paper to learn was that we should sterilize the vulva by the application of lysol for five minutes prior to examination or operation.

DR. PRYOR remarked that the cervix is exceedingly tolerant of pathogenic germs, and hence he would like to know whether Dr. Williams had made any investigations into the organisms found in the cervix.

DR. WILLIAMS, in closing the discussion, said that the vagina of a woman who has not been examined contains no pathogenic or pyogenic organisms—in other words, the organisms which give rise to fatal puerperal fever. In all of his cases in which the temperature went above 101° F. cultures were made from the interior of the uterus, and in all of those instances the cavity of the uterus was sterile, with four exceptions. In these four the organisms causing the infection were different from those found previously in the vaginal secretion; hence they must have been introduced from without. He considered a vaginal examination dangerous, no matter how carefully done. Unfortunately the external organs of generation could not be so easily and thoroughly disinfected as the hands. The vulva should be washed with soap and water, then with alcohol, next with 1 : 1000 bichloride, and finally a bichloride pad should be kept over the external genitals. It is impossible even then to be sure that the external genitals are sterile. Douches are contraindicated not only from a theoretical but from a practical standpoint. It has been shown that the normal vaginal secretion has a decided bactericidal effect, the streptococcus being destroyed in eleven hours. It has also been shown that when vaginal douches are used, no matter what the antiseptic, the bactericidal action of these secretions is modified or destroyed. The practical side was shown by the results in lying-in hospitals—*i. e.*, the results are worse when antepartum douches are used. He was not accustomed to irrigate the uterus or vagina after labor, except for hemorrhage. The practical deduction was that the less one examined per vaginam, and the more one depended upon

external examination, the better. Personally he did not make an internal examination in more than one-third of his obstetric cases. The degree of dilatation of the cervix and the existence of prolapse of the cord are the only things which cannot be determined by external examination and which are brought out by vaginal examination.

DR. PAUL F. MUNDÉ, of New York, delivered the President's address, on

PUERPERAL SEPSIS.¹

DR. E. W. CUSHING, of Boston, read a paper on

THE CHOICE OF METHODS IN HYSTERECTOMY.

He said the extraperitoneal treatment of the stump had been practically abandoned. nevertheless it was well to remember that it was a precious resource when, by reason of extreme shock or hemorrhage, it is advisable to terminate an operation immediately. The intraperitoneal treatment, as first introduced by Eastman, he had used in 1892 in about twelve cases and with good results, but it had been generally abandoned, because in cases in which infection from the cervical canal is to be feared it is better to remove the organ completely. If, when the stump is divided, the incision is made quite conical by traction on the uterus and by an oblique incision, there is very little of the cervical mucous membrane left. A long, curved probe, wet with sublimate solution, is passed through this canal. This prevents infection of the cervical stump from the vagina. Then the flaps of the cervix are united by continuous suture, and, returning, the peritoneum is united over the uterine tissue. Regarding the removal of the cervix or leaving part of it, he said that the burden of proof seemed to be on those who advocate total hysterectomy, for the operation is prolonged upward of half an hour. The field of operation is brought nearer the ureters, and accidents have happened from this source. When the vagina is soft and the vaginal walls are thick or rigid the difficulty of operating is increased. It could not be denied that the cervix uteri is the seat of sexual sensation to a considerable degree, and it is desirable for various reasons to leave it intact unless there are indications for its removal. When hysterectomy is performed for malignant disease of any part of the uterus, the extirpation should be total. When the uterus is removed with the tubes for tubercular conditions or for gonorrheal disease, it is better to perform total extirpation, especially as in these cases it is often essential to provide for drainage. The same necessity for drainage may be a reason for total hysterectomy in cases in which subperitoneal growths or fibroids have lifted up the peritoneum and left large raw surfaces. When the whole cervix has been removed the operator may either leave the vagina wide open, or the peritoneum may be closed, or the vagina and

¹ See p. 1, July JOURNAL.

peritoneum may be wholly closed. The speaker rejected the second method, as its only advantage was that of allowing for the coming away of the ligatures after an annoying period of suppuration. In some cases in which drainage is necessary he preferred to close the vaginal opening entirely, using a glass drainage tube. This is only advisable, however, when a thoroughly trained nurse is at command.

In his opinion, the method of election is that of closing the opening in the vagina with a continuous catgut suture, and afterward uniting the peritoneum with another continuous suture of catgut. This leaves no raw surface in the peritoneal cavity, avoids drainage, and the convalescence is especially smooth and painless. It is better to tie each artery when it is cut; for there is no real advantage in removing the uterus in a given number of minutes, provided the total time of the operation is not thereby diminished. It is indispensable that in the preliminary cleaning of the vagina and uterus all septic matter shall be removed. This is not easily done, and hence in septic cases it is well to pack the uterine cavity with gauze and even sew up the cervix with sutures. This is done by an assistant, so that the operator can keep his hands clean.

As to the so-called combined operation, Dr. Cushing said that he knew of no objection to the method, but it must be now looked upon as in a transition stage of development of hysterectomy. In certain cases of cancer of the cervix it may be an advantage to remove all apparently diseased tissue before opening the abdominal cavity. This combined operation had recently been recommended by a gentleman of large experience. The separation of the vagina by the thermocautery was a procedure which was not applicable to a case of hysterectomy for fibroids, because it prevented primary union of the vagina. This was especially important in hospital practice because of the great danger of infection. The method should only be followed where there is a positive indication for drainage or leaving the vaginal wound open.

A number of methods were referred to and characterized as brilliant, but nevertheless as belonging to a transition stage. The fact that such French surgeons as Ségond and Jacob had adopted our procedures showed that there was nothing to gain by copying these foreign methods. The personal equation and the surroundings of the operator must necessarily be taken into consideration. It was claimed that the advantages of the vaginal operation are that there is less danger of hernia, the absence of a cicatrix in the abdominal wall, greater rapidity of operating, and less shock; but these advantages were not so apparent at the present time as they were a short time ago. The abdominal method would always possess certain important surgical advantages. At present the indications for the vaginal operation are: (1) Inflammatory conditions, where the presence of pus in large quantities is certain and the patient is very weak—in other words, where the operation is for the evacuation of pus in the pelvis, the removal of the uterus being secondary: (2) when the patient is very old, the abdomi-

nal walls very thick, and the vagina capacious, so that the operation can be done very quickly; (3) in cases of cancer of the cervix when the conditions make it undesirable to close the opening in the floor of the pelvis and the abdominal operation seems to indicate danger from sepsis. The vessels must be secured by ligatures, all raw surfaces being covered and the peritoneum united by catgut so as to give a linear cicatrix and healing by first intention. The admirable results obtained by the abdominal route, however, seem to leave little room even for the perfected vaginal operation.

THE TREATMENT OF MYOMATOUS UTERI.

DR. HOWARD A. KELLY, of Baltimore, presented a paper on this subject. He said that one year ago he had presented before the American Medical Association a plea for the more conservative treatment of myomatous uteri. He took the stand that the treatment *par excellence* of myomatous uteri is myomectomy, and that hysteromyomectomy must be reserved for exceptional cases. Myomectomy is the operation of election in the treatment of uterine fibroids in women under 40 years of age. During or before the child-bearing period myomectomy should be performed in all cases except for interstitial tumors of the uterus larger than a six months pregnancy. Nor was it the operation to be selected in the presence of extensive lateral inflammatory disease. Hysteromyomectomy is to be preferred to myomectomy after the fortieth year, except when myomectomy is the simpler operation, as in pedicle tumors. In unskilled hands the risks are greater from myomectomy than from hysteromyomectomy. An analysis was presented of his cases, which included 97 operations, 13 upon colored and 84 upon white people. They dated back as far as 1890. Four of these died, but this was in his earlier experience, and it should not occur now. The tumors occupied every conceivable position and varied greatly in number—from one to seventeen in the individual case. They varied in size up to a six months pregnancy. In a number of instances he had not hesitated to open the uterine cavity extensively. In one case it was opened from the cervix to the fundus. In closing the uterus the mucosa was sutured with catgut on both sides, and then the suture of the muscularis followed. As a rule the largest accessible tumor was the one first attacked. Before enucleation the uterus is brought outside of the cavity and isolated. It was necessary to exercise extreme care in controlling hemorrhage, using perhaps as many as four tiers of catgut sutures. As a rule the hemorrhage had to be stopped by bringing opposing surfaces closely together. The specially dangerous points are the upper and lower angles of the incision. Both uterine arteries, if necessary, may be tied in continuity. One of the natural objections to doing a myomectomy is that it is so frightfully distorted that the first impression is that the organ is nothing but a mass of myomata. As a matter of fact, the uterus was often greatly hypertrophied, so that after removing a number of fibroids it might still be as

large as a four months pregnancy. The previous introduction of a sound would determine the level of the tumor and its relations to the uterine canal. After opening the abdominal cavity inspection will give valuable information concerning the difficulty of the operation, by a consideration of the relation of the uterus and its appendages to the tumor.

DR. HARRIS asked if Dr. Kelly had observed gestation in any of the cases upon which he had operated in this manner, and also regarding the immediate shrinkage of the uterus.

DR. A. LAPHORN SMITH said that about two months ago he had operated upon a fibroid tumor of the uterus in a pregnant woman and had removed the tumor without interfering with the pregnancy. The patient had been married about four months. Examination showed a fibroid tumor attached to the pregnant uterus. The operation was exceedingly easy. The tumor was first brought out and then the uterus. Clamps were then applied as closely as possible to the uterine artery and the tumor was cut off above the clamps. The flaps were then brought together by numerous interrupted sutures of silk. On removing the clamps there was a tremendous hemorrhage. They were reapplied and another row of Lembert sutures was applied. Still there was considerable oozing, so a third row of sutures was applied, and this left a perfectly dry wound. She was sitting up in bed at the end of two weeks, was out of bed in another week, and out of the house in five weeks after the operation.

DR. NOBLE said that last year he had indorsed the line just mapped out by Dr. Kelly. His own experience with myomectomy embraced 25 cases, all of which had made good recoveries, so that he felt that, the mortality not being greater than hysterectomy, there could be no objection to it on that ground. In young and child-bearing women it seemed to him that myomectomy should be generally adopted. Two of these 25 women had since borne children, one of them twins.

DR. W. H. BAKER, of Boston, said that true surgery in the future would prove that we must save the uterus and get rid of the fibroids. He had been working along this line for the past few years. In one case he had removed five fibroids and in another seven from the uterus. Although some of them had been deeply situated, he had proceeded until every fibroid, even those of insignificant size, had been removed.

DR. S. C. GORDON said that he had been doubtful about myomectomy being the rule for this class of cases. He would like to ask what percentage of the women had borne children up to the time of the myomectomy, and also how many had borne children after myomectomy. It had always seemed to him that a fibroid uterus, and particularly a multiple fibroid uterus, would be apt to produce fibroids again, as the "soil" had not been changed by the operation. It was a serious matter to subject a woman to a second celiotomy, and hence this matter should be given very careful consideration. His experience in this direction had been limited almost entirely to subserous and submucous fibroids. This important question about

the possibility of a return of the trouble could hardly be answered until more time had elapsed. He was willing to adopt the new procedures, which were distinctly an advance, but he could not help feeling at present that hysterectomy was the better operation.

Regarding Dr. Cushing's paper, he said that he believed, as a general rule, that the abdominal route is the one to be followed; it certainly was the better one for him. His method was to begin the catgut suture from the broad ligament, carry it down across the stump and up on the other side. The first suture includes that portion of the broad ligament containing the ovarian artery. This extra stitch below the ligature prevents the slipping of the ligature from this artery.

DR. CUSHING said, regarding myomectomy, that it was significant that although many operators had tried it, they did not seem to continue its use. In multiple fibroids he rarely failed to find the uterus filled with little myomata buds, which it seemed probable would grow if not removed. The woman to be subjected to myomectomy should be told these facts, as well as the greater liability to hemorrhage.

DR. HUNTER ROBB, of Cleveland.—I wish to add 10 successful cases of my own to the list already reported by Dr. Kelly in which a myomectomy was performed. One case was of special interest, as the patient, at the time of the operation, was in the third month of pregnancy, and the tumor, which was the size of a closed fist, was so located that it would have made labor difficult. We opened the abdomen and found the growth to be partially interstitial; it occupied the anterior surface of the uterus just at the junction of the internal os with the body of the uterus. We removed the tumor without entering the cavity of the uterus. The patient recovered from the operation, went to full term, and was delivered of a healthy baby. The mother and child are both perfectly well. In another instance the uterus contained four myomatous tumors varying in size from an English walnut to an orange. Two of the tumors were interstitial and two subperitoneal. These were all removed, and in five months a pregnancy occurred which terminated successfully.

DR. DICKINSON asked Dr. Kelly whether he always made a longitudinal incision, and whether he thought there was any advantage in using a transverse incision, as recommended by some operators.

DR. SKENE recalled the fact that at the first meeting of the International Gynecological Society in Brussels he had reported eight successful cases of myomectomy. He said that he had continued his work in this direction since that time, and found that the treatment was growing in favor with him as his experience increased.

DR. KELLY closed the discussion. He said it was interesting to learn of these 133 cases with only 4 deaths. There had been no pregnancies in his list of cases, although a few had been reported by others. The operation of myomectomy, as he had described it, was very different from that described in

the text books, both here and abroad. In foreign books particularly, great care is taken to define and limit its field to that so well known. Where the myoma is below the vesical attachment he used the transverse incision; otherwise he preferred the longitudinal incision. In his list there were 59 married women, 27 of whom had not been pregnant. Of the remaining 32, 17 had had difficult labors. There were three recurrences in his 97 cases. He had interfered in three cases of pregnancy before the fifth month. Two of these had gone on to full term; the other aborted the next day. He did not think we should interfere during pregnancy simply because a myoma is discovered to be attached to the uterus. He thought if we were talking about orchidectomy instead of hysterectomy there would be a greater effort at conservatism.

THE USE OF THYROID EXTRACT IN THE TREATMENT OF FIBROID TUMORS.

DR. WILLIAM E. MOSELY, of Baltimore, sent a communication on this subject, comprising his experience in 5 cases observed in the Maryland General Hospital. In the first case one grain of the thyroid extract was given daily at first, and this dose was increased up to fifteen grains a day. The flow was much reduced, and when last seen, February 9, she was perfectly normal. She has continued to take nine grains daily. There had been no heart, kidney, or stomach symptoms. The second case was a colored woman, 33 years of age, whose uterus was enlarged by an intramural fibroid. Beginning with three grains, the dose was increased up to fifteen grains a day, and when she left the hospital, on February 16, she was still taking a daily dose of nine grains. Her menstrual flow had become normal and her general health had been greatly improved. Examinations of the blood had been made for him by Dr. E. L. Whitney during this treatment, and he had found a moderate increase in the small mononuclear, and a corresponding decrease in the polynuclear, nutrophiles.

Dr. Mosely's conclusions were as follows: (1) Whereas some patients can take comparatively large doses of thyroid with impunity, others are injuriously affected by it, even when taken in small doses; hence one should begin with three grains daily and increase the dose very slowly; (2) in cases of bleeding fibroids thyroid has a very marked influence on the excessive loss of blood, and, in certain cases, causes a diminution in the size of the growth; (3) in appropriate doses (nine to fifteen grains a day) improvement in the general health occurs, probably from the cessation of the loss of blood; and (4) the average duration of the treatment was about nine weeks.

EXTRACT OF MAMMARY GLAND IN THE TREATMENT OF FIBROIDS.

DR. JOHN B. SHOBER, of Philadelphia, presented a communication on this subject. He said that when this extract is administered in ordinary doses (fifteen to twenty grains a day

of the desiccated powder of Parke, Davis & Co.) it acts as a powerful depressant of the heart and produces extreme nervous depression. It should not be used for any length of time in doses of more than from three to six grains daily. It has a marked influence on epithelial structure and is a powerful lymphatic stimulant. As diseases of the lymphatic glands are often associated with menorrhagia, it would seem that the secretion of this gland had some influence on the uterus. His attention had been called to the possible value of mammary gland extract by a paper read before the British Gynecological Society in May, 1896, entitled "The Treatment of Carcinoma of the Uterus, of Certain Forms of Ovarian Disease, and of Fibroids of the Uterus by Extracts of the Thyroid Gland, etc." Last November he had begun the use of the mammary extract supplied by Armour & Co. and by the Phosphor-Albumen Co. of Chicago.

CASE I.—November 7, 1897. Menstruation regular up to three and a half months ago; then menorrhagia and dysmenorrhea lasting from five to seven days. Two years and a half ago an abdominal growth was noticed, which has been since increasing rapidly in size and has been associated with increased menorrhagia and metrorrhagia and much pain. The flowing comes on every two weeks. The growth extended one inch above the umbilicus and was firmly fixed in the pelvis. She was very anemic and nervous. She was put upon the mammary extract. The next menstrual period was free but not profuse, and the tumor seemed to have contracted laterally. At the next period the flow was very much less profuse and the tumor was much smaller and decidedly mobile. The dose was increased from the equivalent of twelve grains to seventy-two grains of the raw gland. After this large dose she developed intense pain in the tumor and the latter was hard and sensitive. After discontinuing the extract for five days it was resumed. The menstrual period which occurred shortly afterward was normal in every respect. On April 4 the abdominal walls were noted to be no longer tense, the tumor had been reduced about one-third, and the general health was greatly improved. She is still under treatment.

CASE II.—A colored woman, 32 years of age. The growth was known to have been in the abdomen for four years. During the past two years she has had profuse and painful menstruation. Examination showed the presence of a large, irregular multinodular fibroid rising two inches above the umbilicus. On January 13, 1898, treatment was begun with the extract, given in large doses. These caused pain in the tumor, which stopped when the dose was reduced. The flow became less profuse and more regular, and her general health improved. The tumor diminished very little. She is still under treatment.

CASE III.—A colored woman, 33 years of age, with a multinodular fibroid and other fibroids extending two inches above the pubes and freely movable. For the past two years her periods have been irregular and frequently painful. Treatment

was begun on November 27, 1897. She now menstruates regularly and without pain. Nodules on the uterus can no longer be demonstrated, the tumor is decidedly smaller, and her general health is improving.

CASE IV.—After one month of this treatment the period was delayed and the flow diminished.

In commenting on these cases Dr. Shober said that it could not be urged that in these patients the menopause had had any influence on the remarkable results obtained. Under the influence of the drug the metrorrhagia and menorrhagia ceased. It could be claimed, at least, that operation had been delayed. It could not be denied that the remedy seemed to act powerfully on the tumor, much as ergot does.

DR. REYNOLDS said that one month ago he had seen these cases of Dr. Shober, and the enthusiasm of the patients was much greater than was indicated by the statements made in the paper. This limited experience certainly did justify the belief that the agent had considerable and positive influence on fibroids, which was worthy of careful investigation.

DR. MANN said that he had tried thyroid extract in fibroids in about a dozen cases. In one or two large fibroids it had had no distinct effect except in the way of improving the general health. In about ten cases of small fibroids there had been a decided benefit from the use of the extract. In only one had there been any unpleasant effect. As a rule the hemorrhages had decreased and the tumors had diminished in size. In one case a small tumor had apparently disappeared and all the symptoms referable to it had been relieved. He felt very greatly encouraged with this experience.

DR. E. L. DUER said that he had used the thyroid extract in 13 cases of uterine fibroids, but only 6 were worthy of mention as having been sufficiently long under observation. Each patient received five grains of Mulford's thyroid extract, and all other treatment was suspended. In 2 cases, after its administration for about two weeks, the dose had to be decreased, and eventually suspended, because of an individual susceptibility to the drug. It was resumed later in a dose of two grains. He could not say that he had secured better results than from other medicinal treatment, except in one case. This exceptional case was that of Mrs. C., the mother of five children. Two years ago the uterus began to protrude from the vulvar outlet, requiring a supporting bandage. There was much pain low down, associated with nausea. He first saw the case in consultation on February 25, 1898. The uterus at that time was pushed up to the right side by a firm, nodulated tumor. There was no menorrhagia. The diagnosis was subserous fibroid of the left anterior aspect of the uterus. She was at once given five-grain doses of the thyroid extract. At this time the tumor extended six inches above the pubes. On April 4 it was found to be only two and a half inches above the pubes, and on May 14 the tumor was scarcely discernible by the most careful examination.

DR. MALCOLM MCLEAN said that he had been using thyroid extract systematically since October, 1897. He had found that in at least three cases it had absolutely controlled the hemorrhage, and in two had markedly reduced the size of the tumor. One woman was exceedingly anemic from menorrhagia, and had been entirely cured of that symptom. He was watching a number of other cases, but they had been under observation too short a time to be of value. Three out of the eight cases had been sufficiently long under treatment to make the results of some value. He had been favorably impressed with the remedy.

DR. FRY said that he had four cases of fibroid under the thyroid treatment. Two of these were hemorrhagic, and in these the result had been very satisfactory. In one of them the hemorrhage had been going on for over ten days, and more recently had been almost continuous. It had, under the influence of the remedy, now returned after an interval of seventeen days, and her general condition was greatly improved. These were young women. The other two cases had passed the climacteric, but there was in one of these hemorrhage from the rectum owing to pressure of a tumor. Systematic measurements had been made and showed a very decided reduction in the size of the growth. In the fourth case there was a large fibroid tumor, and the probe showed the canal to be five and a half inches in length. After one month it was four and a half inches long, and at the end of the next month only three inches and a half. The external measurements also showed a steady diminution.

SHOULD NON-ABSORBABLE LIGATURES BE DISCARDED IN GYNECOLOGICAL SURGERY?

DR. SETH C. GORDON, of Portland, Me., opened the discussion of this question with a paper entitled

SUTURE AND LIGATURE MATERIAL—ABSORBABLE OR NON- ABSORBABLE?

He said that Halsted used silver wire with the idea that it is not only non-absorbable, but is actually a germicide. In the opinion of the speaker its aseptic properties made him prefer it to all other non-absorbable sutures. From data at hand he had about reached the conclusion that for most purposes absorbable material would be preferred for both sutures and ligatures (1) if it was certain that it would not be absorbed until it had accomplished the desired object; and (2) if it could be known positively that the material was aseptic at the time it was used and would remain so until absorbed. It should be understood that inflammation, instead of being favorable to the reparative process, is positively inimical to repair.

The chief absorbable sutures were those of catgut and kangaroo tendon. With the latter his experience had been limited, but unfavorable. He objected to it because of the short strands, which prevent continuous suturing, and the possibility of its

remaining unabsorbed too long and producing fistulous openings. He knew many instances of this character. Catgut rarely fails of absorption, and it is sufficiently elastic to prevent strangulation of tissue. A few object to catgut because of the fear of infection, but the larger number object to it because of the danger of premature absorption and consequent hemorrhage. Dr. Gordon said that since 1884 he had used no sutures or ligatures that were not absorbable, except silkworm gut, which is used to close the tissues of the abdominal wound. In hysterectomy he uses an over-and-over suture from beginning to end of the operation, and nearly all the sutures in the pelvic cavity are carried through the tissues by a needle and tied afterward in order to prevent slipping. For the radical cure of hernia he had found the buried "mattress suture" of catgut to be sufficient. He did not use the chromicized gut because it is too hard to be managed easily, and it acts as a foreign body and tends to impair the circulation in the parts. All exudate thrown out around a buried non-absorbable suture must be of much lower vitality than normal repair tissue and hence must be more easily absorbed. He had used catgut about the uterus and vagina for both recent and more remote lacerations. Perhaps one of the strongest tests for the catgut suture is the operation of cleft palate. He had used it repeatedly in these cases and had had no failures. He would not attempt to close the abdominal incisions by catgut without the help of silkworm gut. He did not recall a case of hemorrhage which was fairly attributable to the use of catgut, except in those cases in which the knot had slipped. In heavy tissues the threaded needle is much to be preferred to the ordinary ligature. The catgut which he uses is preserved in alcohol and is manufactured by Am Ende. It is uniform in quality and strength, but is expensive.

Dr. Gordon's conclusions were as follows: (1) All suture material unabsorbed must necessarily have more or less exudate about it; (2) such exudate is of lower vitality than normal repair tissue where the parts are just approximated and not strangulated; (3) a few days only are necessary for repair where there is no infection, and hence, where there is no great strain on the parts, absorbable sutures only are needed; (4) where continued strain on the parts is unavoidable, non-absorbable tissues should be used for at least two weeks, but should be so placed as to be removed; (5) for such sutures silkworm gut seems to be the best; (6) for all other purposes catgut is sufficient; (7) inflammation is always destructive to complete repair; (8) inflammation is always due to infection; (9) sterile catgut or kangaroo tendon should therefore fulfil all indications for suture or ligature material, with the exceptions named.

DR. R. S. SUTTON said that he had abandoned the use of silver wire except in the operation for vesico-vaginal and recto-vaginal fistula. He had also discarded the use of silkworm gut in all operations except Tait's perineal operation, and he had almost abandoned the use of silk. He used silk in intestinal operations,

and occasionally for tying the pedicle, although he preferred catgut. On three separate occasions he had given up the use of catgut and had returned to it. Finally he had come to use Am Ende's catgut, preserved in alcohol containing a small proportion of rosin, as suggested by Dr. McMonagle, of California. This addition was made to prevent slipping. He still needed a cheaper article. Through the advice of Dr. Edebohls he procured a quantity of the catgut known as "0" and "00." This was put for forty-eight hours in sulphuric ether and the bottle agitated occasionally. At the end of this time the catgut was placed between the folds of a towel for a short time, after which it was transferred to a five per cent formalin solution. It remained in this for twenty-four hours, and, after having been again placed for a short time in a dry towel, it was put in a bath made of one pint of alcohol, forty minims of formalin, and half an ounce of resin. If it was thought best to chromicize the catgut it was placed in a very weak solution of bichromate of potassium. Two years ago he had made up an enormous quantity of this catgut, and continued to use it from the bottle in which it was preserved for sixteen months, or until it was entirely used up. In not a single case did it produce infection. During this time it was tested bacteriologically a great many times, with negative results. He therefore had no hesitation in saying that formalin gut is absolutely safe. Formerly, on closing the abdominal wound with silkworm gut, he had frequently had stitch abscesses. Now the abdominal wound was closed in planes with catgut, the upper layer being done under the skin so as to completely bury the catgut. A few interrupted sutures were inserted through the skin and removed in three or four days. These wounds had not suppurated.

DR. CHARLES P. NOBLE said that during the first eight years of his surgical practice he had employed silk and silkworm gut exclusively. During the last few years he had used catgut more and more. His own results with non-absorbable material had, however, been excellent. The percentage of cases in which intraperitoneal abscesses or sinuses were due to silk ligatures was extremely small. To secure the best results with silk ligatures they must be sterile in the first place. This is accomplished by fractional sterilization. The silk must also be fine, and, of course, this necessitates including only small portions of tissue in the ligature; but this in itself is a decided advantage. Pedicle abscesses and ligature sinuses were more frequent in the old days when gauze drainage was commonly employed. Non-absorbable ligatures also give trouble in hysterectomies in which the cervix is amputated, the sutures becoming infected in the cervical canal. With the introduction of reliable methods of sterilizing catgut he had begun to make use of it as ligature and suture material in the peritoneal cavity and in the cervix in hysterectomies. Gradually catgut had been substituted for the ligature material in his abdominal work, and he expected ultimately to abandon silk for this pur-

pose. He had had a large experience with non-absorbable sutures in closing the abdominal wound. In May, 1892, he had advocated the use of tier sutures of silkworm gut. In 1891 he had described a new method of closing the abdominal wound. Up to that time 375 cases had been closed with non-absorbable sutures, with 8 cases of suppuration. Since then 107 operations had been done, with suppuration in only 2 cases; in other words, out of a total of 472 cases, 10 suppurated, or about 2 per cent. In these cases hernia had developed in only two instances. Although he had been employing buried silkworm-gut sutures in this way for six years, he had yet to hear of any trouble from them.

For some time he had purchased catgut only from the Kny-Scherer Company. The cumol method of sterilization of the catgut had been adopted, which did not in any way impair the strength of the catgut and lengthened the time of its absorption. This method had stood the test of bacteriological examinations and also the clinical test for several years. The method is somewhat expensive and requires the undivided attention of a competent person for a number of hours. In not a single case had he seen primary or secondary hemorrhage with the use of this catgut. Dr. Boldt had informed him that he uses catgut exclusively in all his abdominal work except in suture of the intestine. He makes a treble knot. Dr. Edebohls says that he has always been an advocate of catgut, and now uses this material even in intestinal surgery. He has no cases of secondary hemorrhage to report. In tying the knot he makes a single loop in the first tie and a double loop in the second. Dr. Noble added that in tying catgut it was his custom to make a treble knot invariably and to cut off the catgut about one third of an inch from the knot. He questioned very much whether for the occasional operator the absorbable ligatures and sutures offered any advantages over the non-absorbable ones.

DR. KELLY said that in experiments on dogs with catgut, which was supposed to be absorbed in forty days, it was found that the gut had not been absorbed at the end of a considerably longer period. If he could only have one material for sutures and ligatures he would prefer catgut. Catgut does not bear tension well, and in surface work it is liable to infection. The cumol method of sterilization, with the hydrocarbon at a temperature of 155° to 160° C., renders the gut sterile beyond all peradventure. He was afraid of the dry-heat methods of sterilization used so extensively in the West. Since using this cumol method he had never met with any infection from the catgut, although he had used on an average fifty strands of the catgut daily for the past two years. He considered that catgut was the ideal ligature for vessels of lesser size, and could be used without stint except for the larger vessels, such as the internal iliac, where he employs light silk. In the abdominal incision he had long used catgut throughout in tiers for incisions not over two inches long. For longer incisions he employed silver-

wire mattress sutures with intervening catgut sutures. Catgut is absolutely safe in genito urinary work, except where it is exposed to contamination with urine. In numerous cases stone had been known to form on non-absorbable sutures. If the suture were introduced under the mucous membrane the catgut would answer well.

CONSERVATIVE OPERATIONS UPON THE UTERINE APPENDAGES.

DR. A. PALMER DUDLEY read this paper. He said that in December, 1896, he had presented a short paper to the Society of Alumni of the Woman's Hospital on the conservative work on the uterus and appendages, and had reported 68 cases. In a later report of 88 cases he acknowledged that he had not had the courage to attempt such work where there was reason to believe that gonorrhea existed, and he would probably still be of that opinion had it not been for an accidental success in a case which was not known at first to be gonorrheal. The patient had married at the age of 21 and had menstruated regularly up to the time of her marriage. She had not had leucorrhea. Two months after marriage she began to have pains in the pelvis, severe in character, and sexual intercourse became impossible. The uterus was retroverted and very tender, but there was nothing to lead at that time to the suspicion of gonorrhea. The uterus was first curetted. On opening the abdomen a double pyosalpinx was disclosed, with fresh but firm adhesions. One pyosalpinx ruptured into the peritoneal cavity. The tubes were amputated, all but two inches, and the entire surface of each was touched with pure carbolic acid and washed off with proof alcohol and then with boiled water. The tip of the tube was then fastened to the ovary by one suture. The pathologist reported that these tubes were the seat of gonorrheal infection without any question. She left the hospital on the twentieth day after the operation. When seen five months later he found that menstruation had recurred the next month and had been unattended with pain. She had menstruated twice since then, although going a few days over the usual time. She is now improved very much in her general health, and menstruation is regular, though slightly profuse. Physical examination shows the uterus in good position, with no exudate or tenderness.

On January 27 he had been consulted by a woman, 29 years of age, whose husband had had gonorrhea just previous to marriage, but was supposed to have been cured of the disease. She had a pyosalpinx with intermittent discharges through the rectum. He operated upon her on January 31. The entire pelvic contents were found to be adherent, and the left appendage was hopelessly diseased and discharging through the bowel. It was aspirated and injected with a solution of bichloride of mercury. The outer two-thirds of the right ovary and tube was distended with pus. Drainage was established through the vagina and a firm packing inserted of *dry* iodoform gauze. The gauze was permanently removed on the

seventh day. The bowels were let alone. The temperature did not rise above 102° F., which occurred on the second day, and she made an uneventful recovery, being discharged at the end of the fourth week. Microscopical examination proved the specific nature of the disease.

Dr. Dudley said that he could now report 103 conservative operations on the uterine appendages without a death, and with inflammation occurring in only one case.

METHOD OF SEARING THE PEDICLE WITH THE ELECTRO-CAUTERY.

DR. A. J. C. SKENE gave a demonstration of the method. The broad ligament is seized with a hemostatic forceps connected with the galvanic current, and this current is allowed to flow for about half a minute in the case of arteries of about the size of the radial. For the treatment of the pedicle of the broad ligament he uses such a hemostatic forceps, modified by having claw-shaped jaws. The object is to desiccate but not to cauterize. The forceps should then be opened slightly and slipped off, when it would be found that the stump had been effectually seared and secured against hemorrhage. He had closed the abdominal wound more than one hundred times without leaving a particle of any foreign substance in, and he had not had the slightest suggestion of hemorrhage in any of these cases. The heat should not be allowed to go beyond 190° F., and this is gauged by the milampèremeter. This must be determined for each instrument used, but practically it can be determined by touching the instrument lightly with the finger. This method not only reduces the pedicle to the smallest possible bulk, but it is thoroughly aseptic and will completely close the lumen of the Fallopian tube or of the appendix.

INVESTIGATION OF ACTION OF THYROID EXTRACT ON FIBROIDS.

The following committee was appointed for this purpose, to report individually their experience at the next annual meeting: DRs. MOSELY, FRY, MALCOLM McLEAN, MANN, and DUER.

Third Day—May 26.

DR. J. WESLEY BOVÉE, of Washington, D. C., read a paper on
THE PATENCY OF THE STUMP AFTER SALPINGECTOMY.¹

DR. H. A. KELLY opened the discussion on the papers of Dr. Dudley and Dr. Bovée. He said that he had been pleased that so much time at this meeting had been given to conservatism. By this term he meant the saving of any organ, or any portion of an organ, which, though diseased, might become functionally active. He would make an effort to save some

¹ See original article in July JOURNAL, p. 57.

portion of the Fallopian tube, so as not to entirely preclude the possibility of conception. This meant a great deal for the happiness of the patient. In practice the ovary was constantly sacrificed for mere technical reasons during the operation, a mere matter of surgical habit, and it was a very serious mistake. It should be remembered that the ovary itself is comparatively rarely affected, and is accidentally and innocently near the Fallopian tube and is involved in the inflammatory adhesions. Much was said about chronic ovaritis, but this condition is one of the rarest of all gynecological affections. The ovary might be found cirrhotic, owing to the cutting off of its circulation, but if the ovary were freed from its adhesions and the tube removed there would be no further trouble. It had been his habit for a long time to leave the ovaries, and in these cases he had had the satisfaction of knowing that they were free from the disagreeable sequelæ observed after entire ablation of these organs. There is no advantage in retaining the tubes and uterus when the ovaries are gone. The following example of the benefits of conservatism was cited: The patient was found in a low, muttering delirium; the tongue was brown and the pulse was 140. Her pelvis was simply choked with inflammatory masses. The abdomen was opened and everything found to be agglutinated in the pelvis. He was therefore forced to puncture and drain through the posterior vaginal vault. She made a complete recovery and now comes a considerable distance once a year to see him. So far as could be ascertained, there was absolutely no trace of disease in the pelvis, and she menstruates normally and feels perfectly well. Another instance of conservatism was the following: The wife of a physician had a small, wiry, withered tube, closed at its extremity, and a normal ovary on the right side; on the left side all the ovarian tissue appeared to have been destroyed. She had been suffering extremely, so this tube and ovary were removed, and the other tube and ovary were dropped back behind the uterus. She had not conceived before the operation, but shortly afterward she became pregnant and was delivered of a living child. To counterbalance this, however, she subsequently had an extrauterine pregnancy, which demanded operation. She still has one ovary, which keeps up menstruation. In cases of unilateral papilloma it was questionable how far conservatism should be pushed. In carcinoma of one side it was certainly a mistake to apply conservatism, for there is a very great liability of carcinoma of the opposite side, even though the ovary does not appear to be enlarged and there are no gross evidences of disease on the other side.

DR. W. GILL WYLIE, of New York, said that he had long believed in conservatism. In his opinion the commonest mistake was to subject to abdominal section patients who do not really need such treatment. He had never had much faith in the so-called conservative treatment of cases of pyosalpinx. The true condition of the uterus is often overlooked, and hence, especially in older women, the uterus is sometimes left behind,

although it is impossible to effect a complete cure except by its complete removal. It must always be remembered that the mere fact that the patient survives a conservative operation does not necessarily prove that this conservatism constitutes the best method of treatment. In a large personal experience he had not found many cases of uterine fibroids in which it seemed to him such conservative operations as myomectomy were advisable.

DR. CUSHING said that the argument for this so-called conservative surgery seemed to be based on two or three premises which are taken for granted. The first of these was that all women desire children, or that it is their duty to have them whether they want them or not. The second is that mutilation of these organs destroys their sexual nature. Neither of these is invariably true, according to his experience. Comparatively few of his patients desired to have children if it was going to allow a chance for another abdominal section; their chief desire was to have their health restored. Again, it was not a fact that the removal of the tubes and ovaries, and even the uterus also, impairs the sexual possibilities and natural condition of the woman. From an experience with hundreds of cases and most careful inquiries he felt in a position to make this statement positively. It was not fair to compare oöphorectomy with orchidectomy, for the results are not at all the same, and the feeling of sexual desire which the male holds and cherishes is not a thing which a large proportion of women especially cherish. Many of them consider this and child-bearing a sort of curse of which they would gladly be rid.

DR. JOSEPH TABER JOHNSON said that he had practised the method of occluding the Fallopian tubes suggested by Dr. Bovée. It was certainly a useful procedure in the way of preventing the spreading outward of septic matter from the uterus.

DR. MANN said that he had been a strong advocate of the conservative method and had applied it to the tubes and ovaries. In a young woman there was another reason for such conservative work—*i.e.*, the prevention of the nervous symptoms which so frequently follow the removal of the tubes and ovaries. These symptoms connected with the artificial menopause are very much more exaggerated than in the natural menopause and are exceedingly annoying and prolonged. Dr. Dunn last year had read a paper in which he had called attention to the fact that by the administration of ovarian extract these symptoms could be prevented or diminished. He believed thoroughly in this matter of conservatism, and had been pleased not only with the effect on the general health of the patient, but upon the possibility of the occurrence of conception.

DR. BOVÉE said that he had followed much the same line of work as Dr. Dudley recommended, but he would advise him, instead of making a galvano-puncture through the vagina, to use the finger as a guide, and then to puncture the vaginal

wall from above. This saves a good deal of time at the operation.

DR. A. P. DUDLEY said that the object of his paper was to drive away a certain very common dread of gonorrheal infection and the resulting peritonitis. He had come to believe that gonorrheal infection in the abdomen is less dangerous than septic infection, and he would rather amputate the stump of a gonorrheal tube and leave it open than do this in the case of a septic stump. It was known that the life of the gonococcus is limited; it was the result of the activity of the gonococcus that kept up the disease by a mixed infection. He did not pay any attention to menstruation in performing laparotomy, and he had never failed to find at least two ounces of bloody serum in the pelvis at the time. He was therefore sure that the major portion of the bleeding at the beginning of menstruation is intraperitoneal. It is a leakage from the ovisac; the ovary does bleed. He did not look upon the end of the stump as any more dangerous than a ligature about a septic stump, and consequently he ligated the ovarian artery with a whipstitch, using the finest catgut and the finest cambric needle. He always thoroughly curetted the uterus and swabbed it out with full-strength carbolic acid prior to operation. He never allowed the uterus to drop back into the pelvis so that it could again become diseased. It had taken him since 1887 to collect these 103 cases in order that he might know the ultimate results in his cases. The reflex conditions following such work in young unmarried women are exceedingly important, and if they could be prevented it was well for the time, even though it might eventually necessitate a second laparotomy.

THE SURGICAL TREATMENT OF STERILITY—HOW FAR IS IT JUSTIFIABLE AND EXPEDIENT?

DR. MATTHEW D. MANN opened the discussion of this topic in the absence of Dr. Polk, who had been expected to consider the tubes and ovaries. Dr. Mann considered the operations performed on the vulva, vagina, and uterus for the cure of sterility. Diseases of these organs, he said, result largely in mechanical hindrances to conception, and therefore the only relief is in surgery. Modern surgical methods have robbed this class of operations almost entirely of their danger, and therefore little objection could be raised to their performance where indicated. The expediency of such treatment must depend upon whether satisfactory results accrue from such procedures, and the experience of the profession most emphatically asserts that they do. The conditions which might induce sterility were enumerated as follows: (1) vaginismus; (2) atresia of the vagina; (3) stenosis of the os, usually accompanied by deformity of the cervix; (4) lacerations of the cervix; (5) uterine displacements; (6) endometritis and adenomatous disease; (7) cervical catarrh; and (8) tumors.

Vaginismus.—Little or no advance has been made in the treatment of vaginismus since the days of Marion Sims. He showed that the spasm is reflex, depending upon abnormal conditions around the hymen or the seat of the hymen. He advised that the hymen, or its remains, should be removed and the vulva forcibly dilated: after the parts had thoroughly healed, if tenderness still remained, that the patient should wear dilators, gradually increasing in size until the vagina was sufficiently dilated and all tenderness and reflex spasm were abolished. Dr. Mann said that he had followed this plan many times, and wherever it had been faithfully carried out he had had most satisfactory results. Where the hymen had been very thick, after its removal he had brought the edges of the mucous membrane together with fine catgut sutures, in order to prevent as much as possible the formation of cicatricial tissue. Antiseptic douches should be used until the parts are thoroughly healed, after which the dilators may be worn. For the primary dilatation of the vulva he had found Goodell's speculum very serviceable, but it was necessary to have the instrument reinforced with steel bars in order to make it strong enough. All attempts at sexual intercourse should be interdicted until the parts are entirely cured.

Atresia of the Vagina.—The treatment of atresia of the vagina consists in cutting the bands, dilating the vagina thoroughly, and doing plastic operations on adhesions, so as to keep the parts covered with mucous membrane, so far as possible, wherever bands of sufficient size exist. After the operation the vagina should be considerably distended with an iodoform tampon, in order that the parts may be kept thoroughly distended until union has taken place. If iodoform be freely placed in the vagina the tampon may be left in a number of days. In his experience most cases of acquired atresia of the vagina had been in women past the child-bearing age.

Lacerated Cervix.—It was not necessary for him to advocate the operation of trachelorrhaphy in appropriate cases. There could be little doubt that extreme lacerations predispose to sterility, or to the premature loss of the ovum if conception takes place.

Stenosis of the Os —Deformity of the cervix and stenosis of the os so frequently go together and are so commonly associated with antelexion that it is hard to separate them. The treatment of this condition has given rise to a great deal of discussion and to an abundant literature. He thought there would be little opposition to the statement that the treatment most generally advocated at present is forcible dilatation and packing with iodoform gauze, the uterus and cervical canal being at the same time curetted if there are sufficient indications. Following this, some authorities advise the use of large stem pessaries, either of glass or of hard rubber, or the use of the aluminum tube, of which Dr. Wylie will doubtless tell us more.

He had had little experience in the use of any of these instruments, preferring generally to keep the uterus well packed with

iodoform gauze for a considerable length of time. This is removed frequently, the body of the uterus washed out with hydrogen dioxide, and the packing replaced. This treatment he had kept up for some weeks continuously and had seen the most satisfactory results. The cervical canal had remained patulous and the complicating endometritis had been in this way entirely cured.

Acquired stenosis or closure of the cervix he had seen several times, but always in women near the menopause.

Displacements.—As regards anterior displacements, little more need be said than had already been stated under the last heading. Vaginal pessaries are useless, but the forcible dilatation and packing often result in great good, not only in relief of other symptoms, but also in the cure of the sterility. It must be borne in mind, however, that under any plan of treatment the cure of sterility resulting from anteflexion is uncertain, and we cannot promise a cure with any degree of assurance. Also we must remember that anteflexion is not necessarily followed by sterility. For backward displacements a pessary frequently does all that is necessary. He had many times seen pregnancy follow the use of a properly fitting pessary. Should the patient be unable to wear a pessary, Alexander's operation offers the best chance of cure. He had strong faith in this operation; and, having had several patients go through pregnancy after its performance without noticing any ill effects from the operation, his faith in it was now even greater than before.

Endometritis—Endometritis and adenomatous disease, conditions which can hardly be diagnosed one from the other, must be held to be the most frequent cause of sterility with which we have to deal, either alone or complicating other conditions. Fortunately it is now much more amenable to treatment than formerly. Forcible dilatation and curetting are the first indications, followed by packing with iodoform gauze. Should the disease not yield to one operation it may be repeated several times; but, better still, after the first operation the uterus may be continuously packed with iodoform gauze, or with gauze saturated with a ten per cent solution of ichthyol and glycerin. This may be put into the uterus three times a week, the parts, previous to each application, being moderately dilated with Peaslee's dilator. If this be kept up for some time the disease will certainly be cured; he had met with a number of instances in which pregnancy had followed this plan of treatment.

Cervical Catarrh.—Undoubtedly a simple cervical catarrh may cause sterility. Too little attention had been paid, it seemed to him, to the writings of Sims in this matter. If anybody would take the trouble to read over his paper "On the Microscope as an Aid in the Diagnosis and Treatment of Sterility," he could not fail to be impressed with the importance of the methods there advised. As they are disagreeable in their performance, both to the patient and to the physician, they seem to have failed of general adoption; but certainly Sims achieved

satisfactory results, and he had no doubt that if this treatment should be revived the results, in the simpler cases, would be more satisfactory than at present. An acrid cervical catarrh may undoubtedly kill the spermatozoa, and until this is removed or cured there can be little hope of the occurrence of conception. By a microscopical examination only could we tell when a cure is effected. In obstinate cases the application of the sharp steel curette to the entire length of the cervical canal is strongly indicated.

It should not be forgotten, in the treatment of sterility, that the fault sometimes lies with the male. Some authorities give as high as 31.5 per cent in which the male is to blame. Of course, if this were so, there was no use in treating the female. Therefore treatment directed to the female, without a previous examination of the male, is irrational and uncalled-for, unless there are other and decided indications.

DR. W. GILL WYLIE said that his interest in this subject dated back to the time when he had been associated with Dr. Sims. At that time he had endeavored to devise some plan for the relief of those cases of ante flexion and dysmenorrhea associated with sterility. At first he had secured good results, and he had continued the method for fifteen years, but had recently learned the reason for many of his failures. The original cause of the sterility in many of these cases, he was satisfied, was an imperfect development of the genital organs, and that this imperfect development became more and more common as one ascended in the social scale and our so-called civilization increased. Thus, if at about the age of puberty the woman uses up all her strength in the development of the brain, the sexual organs will suffer. In many women, apparently well developed physically in other respects, it would be found that the development of the genital organs would be defective. Early marriage seems to develop the uterus, but if they do not marry until 25 or later permanent sterility often ensues. Another common cause of sterility is local treatment of the uterus by too strong applications. He had not been able to accept the treatment of Dr. Sims as rational, and certainly the results had not been very good. He was sceptical as to the part played by mechanical conditions alone in producing sterility; the real cause, in his opinion, was defective development of the genital organs and consequent endometritis. Some years ago he had been in the habit of using a dilator which would dilate the uterus sufficiently to allow of inserting a good-sized drainage tube and leaving it there. In many of these imperfectly developed cases, stretching up to even three-fourths of an inch would often result in a splitting of the uterus into the broad ligaments. The endometrium should also be gently curetted, using a *steel* curette, and then a *light* application should be made of a few drops of carbolic acid. The treatment of the chronic endometritis is similar to the surgical treatment of an old sinus, with this difference: that in the uterus there are glands and follicles secreting fluid, and hence, if scars are left

and the mouths of these glands and follicles are thereby closed, there will surely be disease of these parts in the future. Moreover, the uterus cannot be drained like a sinus, because the internal os is an irritable sphincter which shuts down upon a soft substance like a gauze drain. Besides this, gauze does not drain away the thick cervical secretion. Long ago he had used a hard-rubber bent stem with a groove for drainage. His practice had been to apply an Albert Smith pessary after the introduction of the drainage tube. At one time he had used aluminum, but this substance becomes roughened in about a week and then acts as an irritant. After a week or ten days the drainage tube and pessary are removed and nothing else is done except to improve the general health. By this treatment many cases of endometritis would be cured and a fair proportion of cases of sterility. If menstruation becomes painful again, the treatment should be repeated; only this time the drainage tube should be left in for one or two months. As a rule this gives the patient very little inconvenience, although, of course, violent exercise and sexual intercourse cannot be indulged in. By this repetition of the treatment his proportion of successful cases had been greatly increased.

REMOVAL BY ABDOMINAL INCISION OF THE REMAINS OF AN EXTRAUTERINE FETATION OF FOURTEEN YEARS' DURATION.

DR. ANDREW F. CURRIER, of New York, reported such a case. The patient was a well-developed blonde, 45 years of age, a school teacher by occupation. She had had one child twenty-seven years ago, after a normal labor, followed by a period of sterility lasting twelve years. She then became pregnant a second time, and during her pregnancy continued at her work. On August 2, 1884, she was seized with severe pain, necessitating her remaining in bed until October, when she again returned to the school. Her physician was puzzled at the abortive attempt at labor, but a gynecologist advised doing nothing. The abdominal enlargement gradually diminished in size. In August, 1897, she strained herself while getting on a street car and suffered extreme pain in the abdomen. The abdomen then began to enlarge. When seen by him shortly afterward she was quite anemic and there was a cardiac murmur. Examination led to a diagnosis of retained fetus or a very dense fibroid of the uterus. The case was of interest because it gave an insight into the natural history of prolonged abdominal pregnancy. He was unwilling to attempt the removal of the tumor at that time on account of the patient's bad condition. She improved under general treatment, and he again saw her on November 29. By that time the abdominal tumor had decreased and the pain had nearly ceased. A fistula had formed in the rectum and in the left iliac fossa, through which small portions of fetal bones had been extruded. She had an offensive diarrhea. Her temperature was 101° F. A long median incision was made, after previous curettage and packing of the fistulous track. The intestines were firmly adherent to each

other, and from the lower portion of the peritoneal cavity a putrid, offensive fluid kept welling up. Separation of the adherent intestines was impossible without inexcusable violence; he had, therefore, enlarged the opening through which the putrid fluid was oozing, and came upon the fetal mass. There was no evidence of placenta or fetal membranes; the skin and muscular tissue had entirely disappeared, and there remained only the bones, closely packed together and almost entirely disarticulated, with the exception of a portion of the head and of the spinal column. Altogether there were one hundred and twenty-six fragments. After the removal of these the cavity was irrigated with hot water and then packed with gauze to check the oozing. After removal of the gauze the cavity was again packed, and its thin walls secured by silkworm-gut sutures to the abdominal wound, so as to isolate the cavity from the general peritoneal cavity. The upper and lower portions of the cavity were closed. After twenty-four hours the dressings were removed and feces in abundance were found in the wound. The dressings were changed daily. The sutures were removed in twelve days. Naturally the wound had become infected throughout by the flow of feces. On January 4, 1898, the wound having contracted a good deal, an effort was made to close it. The rectum was first irrigated and a large quantity of hardened feces removed. The anus was dilated with a rectal speculum and the fecal mass removed by a scoop introduced through it. A large sound was next passed up the rectum and a fistulous opening discovered to be about five inches above the anus. The opening was about one inch in diameter, and so low in the pelvis that it was impossible to pass sutures from above. It was also too far from the vagina to warrant an attempt to close it through an opening in the vagina. As the intestines surrounded the fistula, it was thought best to resort to the slower process of allowing Nature to roof it over by plastic material. The sides of the abdominal wound were therefore curetted, and a large drainage tube was carried through the abdominal incision and drawn downward into the rectum, the upper end remaining in the abdominal incision. The abdominal wound was then closed around this tube. At first the wound did well, but it subsequently became infected again by leakage of feces, and the abdominal wound had healed by granulation. The patient did well for a considerable time and then developed a sudden attack of uremia, of which she died, just ten weeks after the first operation. No autopsy was permitted. It was interesting, Dr. Currier said, to note how quickly sepsis occurred after the dividing layer of new tissue had been broken. Various similar cases had been reported; perhaps the longest time the fetus is known to have been retained in the abdominal cavity was fifty-five years.

THE METHODS OF CHOICE FOR THE REMOVAL OF HAIRPINS
FROM THE BLADDER IN WOMEN.

DR. CURRIER also read this paper. He said that it was not

unusual for women to introduce hairpins into the bladder. Reverdin had met with 4 such cases in the course of three years. Dr. Currier said that he had analyzed 56 cases reported in the last fifty years. Most of these occurred in France. The motive was usually twofold. In the greater number of cases it is an adjunct to masturbation, and in the balance it is an effort to produce abortion. The hairpin meets with but little resistance until it reaches the neck of the bladder, when it is seized quite firmly, so that it slips from the person's grasp. Dr. Currier reported 2 cases that had come under his observation, the first in a woman of 19, cause unknown, and the second in a woman of 30 years, the mother of five children, who introduced a hairpin to produce an abortion, supposing herself to be pregnant. After several ineffectual efforts to extract it he cut down directly upon a sound through the vagina, and brought out first one end and then the other end of the pin. It was then found that the mucous membrane of the bladder had been perforated and that the hairpin was embedded in the mucous membrane. It was finally completely extracted and the wound sutured. The patient made a good recovery.

In all of the reported cases the foreign body caused tenesmus, painful micturition, and hematuria, and even after a few days a phosphatic deposit formed on the foreign body. In a number of cases the calculous deposit was large, and in a few there were calculi in addition to the one having the hairpin as a nucleus. These pins had been retained from a few hours to fourteen years. In one case there were four hairpins and in another two. In most cases the urethra was incised in order to facilitate dilatation; in 3 it was passed through the urethra spontaneously; in 1 it was removed by suprapubic cystotomy. The result of treatment was in most cases satisfactory. The speaker said he would prefer a vaginal incision in these cases. In long-standing cases the bladder should be opened to secure drainage and to remove calculi, if any are present.

DR. MANN said that two or three years ago there had been reported to the Society a case of retention of a fetus of twelve years' duration and a case of his own of eight years' standing. He had followed the case for eight years, but during this time the patient refused operation. She finally consented, and then the sac was found filled with a putrid fetus. There were openings communicating with the bladder and the bowel. He was obliged to resect a considerable portion of the large and small intestine and suture the bladder. She had had three children during the time she carried this fetus in the abdomen. It was really an ectopic gestation and not an extrauterine pregnancy, because the sac was in one horn of the uterus. The patient recovered and is now alive.

DR. WILLIAMS said that Dr. Currier had neglected to mention the earliest case. The first two cases of extrauterine pregnancy which were operated upon were recorded in the sixteenth century. The first of these was by Neuffer, a castrator

of pigs, whose wife was the patient. She was operated upon at term, and the woman is said to have recovered. The second case was reported in the early part of the sixteenth century. The woman had carried around the fetus for five or six years, and then developed an abscess; this was opened and the fetus removed. Subsequently she became pregnant in the same way, but no one would venture to open the abdomen, and she died.

DR. BOVÉE said that he had recently had a case of extra-uterine pregnancy of eight years' duration. The patient was a farmer's wife. Her pregnancy apparently pursued the usual course, but it did not terminate in labor. She continued to suffer, until finally her physician sent her to him, along with the fetal parietal bone which the physician had removed from the rectum a few days previously. Examination showed a mass in the left side of the abdomen, extending from the broad ligament up to the spleen. On abdominal section it was found that the mass was entirely retroperitoneal and that it could not be brought up to the abdominal wall. He therefore packed gauze around the mass and opened it. With considerable difficulty the bones were removed piecemeal, along with considerable fecal matter. The opening in the sac was stitched to the abdominal wall and the skin to this peritoneum. The cavity was packed with gauze and a drainage tube inserted. The bowels moved almost entirely through this opening, and this continued for a considerable time. The woman went home at the end of about two months and a half with the wound closed. During this time she became pregnant, and now has a child 3 years old.

DR. CURRIER said that the case last reported was very unusual, because it was evidently one of those in which there was rupture into the folds of the broad ligament. He did not know of any other case in which the pregnancy had gone on for this length of time.

A CASE OF ENDOTHELIOMA LYMPHANGIOMATODES OF THE CERVIX UTERI.

DR. HUNTER ROBB, of Cleveland, presented a report of such a case. He said that endothelioma of the cervix is comparatively rare—the only case that he had been able to gather from the literature was the one forming the subject of this report. The clinical appearance suggested the ordinary cylindrical-cell carcinoma. The diagnosis of ordinary malignant disease of the cervix was made. On account of the extensive involvement the ordinary operation was out of the question. The true nature of the condition was only discovered by the routine examination made in all such cases. The microscopical diagnosis had been confirmed by Dr. Flexner, of the Johns Hopkins Hospital. Microscopical examination showed an absence of mucosa. The muscular layer composed the stroma of the tumor and consisted of bands and nodes with long, spindle-

shaped nuclei. The tumor proper consisted of cells arranged in masses occupying definite spaces. The predominating cell was oval, but there were smaller cells of a lymphoid type. Some of the cells were undergoing fragmentation. No intercellular substance could be made out. There was a distinct tendency to run in and out in the stroma. The vascular, cleft-like spaces were lined with flattened cells resembling rows of endothelium. It would seem, therefore, that the tumor must have sprung from the endothelium, hence the name.

In response to questions asked during the discussion of his paper, DR. ROBB said: In regard to the President's question, I would say clinically the growth appeared to be due to carcinomatous disease of the cervix uteri, in which the only possible indications were the carrying-out of palliative measures. As to Dr. Gordon's question, I would say that the diagnosis of malignancy was made from the clinical appearances, and that the pathology of the disease was discovered by the microscopical examination.

POST-OPERATIVE SALINE INFUSIONS.

DR. EUGENE BOISE, of Grand Rapids, presented this paper. He said that the five post-operative conditions endangering life are, hemorrhage, shock, sepsis, uremia, and intestinal obstruction, and in all of these the intravenous use of saline injections is indicated as an extremely valuable and life-saving measure. The intravenous route should be given the preference, because (1) it is practically no more dangerous than other methods; (2) it supplies the fluid most quickly and certainly to the system; (3) it brings heat to the cardiac and arterial ganglia; and (4) the stimulating action of the saline solution on the heart muscle is more immediate and more marked. The solution should always be used at a temperature of about 116° F. The normal saline solution had proved the most acceptable. It not only fills the capillaries, but dilutes the blood, rendering it more available for purposes of nutrition. In post-operative shock which is entirely independent of hemorrhage, saline infusion is exceedingly valuable. In this condition, as a result of spasm, the blood is forced out of the arteries and is retained in the veins. Here it is not only the fluid but the heat of the solution which benefits. In cases of grave sepsis saline infusion is very useful, and it is being more generally adopted. The important indications were the condition of the circulation and of the kidneys. Aside from diluting the blood and so diminishing the number of germs acting upon a nervous centre at any one time, it seemed probable that these injections also act by favoring the elimination of toxins. Collapse and intestinal paralysis are considered to be contraindications to intravenous injections. A convenient arrangement for giving these injections consists of two reservoirs, one containing a very hot and the other a very cold saline solution, both connecting with a tube leading to the vein.

DR. HUNTER ROBB, of Cleveland.—I have employed the intravenous and subcutaneous infusion of salt solution in a considerable number of cases. I have also left salt solution in the abdominal cavity after operations in which the abdomen had been closed without drainage. I have also, immediately after abdominal operations, employed rectal injections of salt solution containing, in addition, strychnia, brandy, and carbonate of ammonia. From observation of my cases I am convinced that the use of the salt solution undoubtedly diminishes the shock which generally follows a serious abdominal operation; and it also seemed to prevent to some extent the thirst of which patients so frequently complain after such operations. The injections of salt solution into the rectum during abdominal operations I think were first brought to the notice of the profession by Dr. W. Gill Wylie, of New York. For the past few years I have been using the salt solution as a routine treatment after abdominal operations. Two cases which recently came under my observation seem to illustrate very well the beneficial effects which may be derived from its administration in one or other of the ways indicated. In the first case densely adherent tubes and ovaries had been removed and the abdomen had been closed without drainage. The patient left the table in what seemed to be a perfectly satisfactory condition. One hour after she had been returned to the ward her pulse became somewhat quickened and she seemed to be suffering from shock. After the lapse of another hour the radial pulse was not perceptible at either wrist. In view of this fact and of the presence of other symptoms pointing to the occurrence of a dangerous internal hemorrhage, it was determined to reopen the abdomen without further delay. During the whole course of this second operation, which lasted an hour and a half, infusion with sterile normal salt solution into the arm vein was carried out. On opening the abdomen at least one litre of blood, partly fluid, partly coagulated, was found. This was first removed, and, the abdominal cavity having been thoroughly cleansed, the pedicles were brought up and found to be perfectly dry. A large torn area on the posterior surface of the uterus, extending from just beneath the fundus to the uterine attachments of the utero-sacral ligaments, was bleeding freely, but the hemorrhage was easily controlled by means of silk ligatures. The abdominal cavity having been again cleansed with sterilized salt solution and sponged dry, four pieces of ten per cent iodoformized gauze were introduced into the pelvic cavity. It is to be noted that in this instance infusion of normal salt solution was carried on from the very beginning of the operation. After fifteen minutes the pulse reappeared at the wrist, being about 150 to the minute and the volume being fair. In all about seven litres of normal salt solution were used. The patient improved rapidly and now is perfectly well.

This case would go to show that where the loss of blood has been considerable it is wiser not to wait until after the comple-

tion of the operation before giving the salt solution. By employing it from the very outset we are able not only to combat the effects of shock from which the patient is already suffering, but also to provide against the additional exhaustion which would otherwise result from a prolonged second operation, which, in her already weakened condition, is very likely to prove fatal.

A second case, which occurred recently, was one from which we had removed a densely adherent bilateral tubo-ovarian abscess. Thirty-six hours after the operation the pulse became very rapid, so that it was practically impossible to count it. The patient's condition suggested either an internal hemorrhage or a beginning fatal sepsis. We reopened the lower angle of the incision and washed out the pelvis thoroughly with eight litres of sterilized salt solution; at the same time salt solution was injected under the breast at intervals of an hour, eight litres in all being used. The patient made a satisfactory convalescence.

DR. W. GILL WYLIE said that many years ago he had noticed that washing out the abdominal cavity with hot water, especially if the fluid were thrown against the diaphragm, immediately improved the patient's condition. He now carried out the same idea by injecting saline solution into the rectum during operation, before there was any special indication for it, such as hemorrhage. He had used in this way as much as three quarts, and had found shortly after the operation that the rectum was empty, showing that the fluid had been absorbed. However, special preparation of the patient before operation would render even this procedure largely superfluous.

DR. BOVÉE said that he preferred the subcutaneous use of salt solution to intravenous injections, because the former is safer. There is a danger of over distension of the circulatory organs and resulting paralysis from intravenous injections. There would seem to be a special danger from injecting large quantities of salt solution into the circulation in cases of anuria—a danger of possibly producing a hydropericardium. He did not approve of introducing saline solution at a temperature of 118° F. into the veins, for the temperature of the vena cava is 107° F.

DR. S. C. GORDON said that theoretically he would be inclined to make the same objection regarding the temperature of the fluid employed, although he was always willing to bow to the judgment of clinical experience. His recent practice had been to fill up his patient with fluid for forty-eight hours before operation, as this not only increases the quantity of fluid in the blood vessels, but largely prevents the excessive thirst experienced after operation. In conjunction with the use of saline solution it would be found that almost extraordinary doses of strychnine could be tolerated. Within about eighteen hours he had given one grain of strychnine hypodermatically in a case of collapse, and he believed this saved the patient's life.

This was far better than hypodermatic injections of ether or alcohol.

DR. ENGELMANN said that in cases of uremia or blood-poisoning it would seem better to perform venesection before resorting to the saline infusion.

DR. CHADWICK said, regarding the route by which the saline solution should be introduced, that salt solution put into the cellular tissue becomes serum by the time it reaches the general circulation; hence it seemed very important to introduce it through the cellular tissue whenever this method was sufficiently rapid.

DR. WILLIAM JONES, of Rochester, said that Dr. Dawbarn had advocated injections of salt solution into the femoral artery at a temperature of 118° F. and in conjunction with injections of strychnine. The subcutaneous injection of such a fluid was certainly harmless, and the fluid would reach the heart at a much lower temperature. The remarks of the last speaker regarding the conversion into serum would apply to the intra-arterial injections.

DR. MANN said that the former teaching was that patients subjected to abdominal operations should be deprived of water, with the idea of making absorption more rapid. This was undoubtedly a great mistake. He believed that his fatal cases occurring after etherization might have been saved by the timely use of saline injections by the rectum. He had reserved the intravenous injections for the urgent cases, such as those of hemorrhage. Sometimes he substituted an infusion of coffee for the water in the rectal saline injections.

DR. REYNOLDS described a routine use of water which had proved exceedingly satisfactory to him in the past two years. During that time he had not opened the abdomen of any patient, except in an emergency, without this preparatory treatment. The patient is put to bed three days before operation, and the bowels are thoroughly opened each day. She is given nothing but broth and eggs for food. This almost does away with tympanites. A pitcher of cool water (not iced) is placed by the bedside, and the patient is urged to drink ten to twelve glasses of this water daily for these three days. There is apt to be more oozing after the operation, but otherwise there is no objection to the method. Immediately after operation the patient receives a pint of salt solution by the rectum, and this is repeated at intervals, depending upon the tolerance of the rectum—never less than half a pint every six hours. It was well known that the annoying thirst formerly observed had been greatly decreased by diminished handling of the intestine. He had reduced it still further by this routine preparatory treatment.

DR. NOBLE said that he had also been pleased with the change of practice to the freer use of water. At the time when very little water was given during the first forty-eight hours after operation, the patients passed less than half of the average quantity of urine now voided. From the standpoint

of preventing uremia there could be but little question regarding the value of this treatment. In urgent cases the veins are usually so collapsed that he did not now stop to hunt for them, but resorted to other methods. He knew of at least one case in which gangrene of the extremity had resulted from the intra-arterial injection of salt solution. Dr. Humiston, of Ohio, was the first one to call attention to the routine plan of making the patient drink large quantities of water. He also used saline injections by the bowel systematically at intervals of a few hours, and found that it not only added to the patient's comfort, but if the sulphate of magnesium were added the bowels could be easily and thoroughly evacuated.

DR. BOISE said that there should be no alarm about using fluid at a temperature of 118° F., for death is not due to the hyperpyrexia, but to the poison. The hot solution acts better on the heart and ganglia. In the majority of cases a venesection is not necessary, because the fluid is not retained in the vessels for any length of time.

STREPTOCOCCIC INFECTION IN CHILDBIRTH, AND THE APPLICATION OF SERUM THERAPY.

DR. HENRY D. FRY, of Washington, D. C., presented a communication on this subject. It was based on the results of a series of cultures made from the lochia in the lying-in hospital in Washington in cases which had a temperature of 100° to 101.8° F. after childbirth. In none of the cases were streptococci found. In all, 47 observations were made. In 9 the cultures were sterile; in 13 the staphylococcus albus existed alone, and 6 times with other bacilli, and once with the colon bacillus. A tabulated statement was presented. When streptococcus infection occurs after childbirth, lacerated surfaces take on an unhealthy appearance and become covered with false membrane; the lochia are first suppressed, then mucopurulent and odorless. At the beginning of the attack the presence of an odor indicates saprophytic germs, and not streptococci, but occurring later it indicates a necrotic process. Under favorable conditions an inflammatory exudate forms, and by leucocytic action the penetration of bacteria to adjacent tissues is prevented. The streptococcic inflammation thus often remains localized in the vagina or uterus until it exhausts itself. With less resistance on the part of the individual the protecting barrier is broken down and general infection results, accompanied by extensive inflammatory complications in the locality and in distant parts. The diagnosis of streptococcic infection must rest upon the bacteriological examination and the clinical appearances presented. The initial symptoms are often chilly sensations and elevation of temperature. Localization of the infected area is accompanied by a general amelioration of the symptoms. On the other hand, general infection is attended by a general aggravation of all the symptoms.

The application of serum therapy to puerperal sepsis dates

back to April 6, 1895, when it was used successfully in a case in the Paris Maternité. The reported results have been exceedingly variable, and in some instances the fatal termination seemed to be attributable to the use of the serum. Dr. Fry said that he had sent letters of inquiry to various prominent members of the profession, and the replies represented all shades of opinion. Of the 46 replies, 30 stated that they had had no experience with the serum, while 14 had been favorably and 5 unfavorably impressed with its use. This correspondence gave a total of 83 cases. A tabulated analysis of these was presented. Of the 83, the result was said to be good in 10 in 8 it was decidedly negative, and in 65 it was considered to be doubtful. The explanation of these varying opinions was probably to be found in the fact that bacteriology is yet in its infancy, and also by the variable quality of the serum and by the stage and variety of the sepsis. It should always be borne in mind that antistreptococcic serum is powerless against other forms of infection than that due to the action of the streptococcus. In some reported cases of mixed infection a curettage had relieved the sapremia, and the use of the streptococcic serum had successfully combated the streptococcic infection. Mixed infection therefore necessarily introduces another complication. The method of Marmorek requires one year to bring a horse to the required state of immunity. Although the best results are naturally obtained in cases in which the serum is used early, some of the successes have been secured in cases in which it was first used on the fourteenth day or later.

The initial dose of the serum should be five to ten cubic centimetres, and the dose should ordinarily be repeated daily. Improvement is usually observed after the first few injections, but recurrences or relapses are common in all forms of streptococcic infection. In fatal cases attributed to the serum the symptoms were collapse, rapid pulse, low temperature, and uncontrollable vomiting. He had succeeded in collecting a total of 119 cases. Of this number 77 recovered, giving a mortality of a little over 35 per cent. This mortality, however, could hardly be attributed to the particular method of treatment, because there was reason to believe that in many instances the cases had been badly selected, and the treatment had been begun only when the patient was almost moribund.

DR. WILLIAMS said that the frequency with which the staphylococcus albus had been found led him to think that the technique of the examinations had been faulty. Again, the finding of yeast organisms in the lochia is practically evidence that the lochial discharge examined was that found in the vagina, and not the lochial discharge taken from the uterus; the cultures should be taken directly from the uterine cavity, as the lochia differ very markedly in the two situations. Dr. Williams then presented a series of 46 cases in which the temperature reached 101° or 102° F. after confinement. In these cases staphylococci were found only three times, twice the

staphylococcus albus and once the staphylococcus aureus. These results had been further supported by Koenig, who, in a series of 175, had found the staphylococcus five times. He had looked over the literature prior to 1897, mostly from French sources, and had collected 82 cases, of which 43 per cent died. In 42 of these cases the bacteriological examination showed the cases to be examples of pure streptococcus infection. The reports from Pinard's clinic show that the prophylactic value of the serum is much less than claimed by Marmorek. Another source of error in all these cases was to be found in the fact that the clinical history, even of pure streptococcus cases, is extremely variable. In 75 cases of this kind at Leipzig the mortality was from 5 to 7 per cent. Sometimes these cases have chills and fever for several days, and then suddenly, and without any warning, the temperature drops nearly to the normal and the patient goes on uninterruptedly to recovery. At the present time he was personally extremely sceptical as to the value of the serum treatment.

DR. REYNOLDS said that the remarks made about the clinical aspects of these cases were exceedingly interesting to him, as they were entirely at variance with his own experience. A rather large experience with obstetric septicemia had led him to believe that diphtheria infection, under prompt and thorough curettage and cleansing of the parturient canal, generally gets well within a day or two, and that infection by the staphylococcus and the colon bacillus, when receiving prompt local treatment, generally does well, but not so rapidly, and that when these forms of infection are complicated with the streptococcus they present a very doubtful prognosis. He had only seen one case of *pure* streptococcus infection recover, and that patient had been curetted and subjected to treatment within an hour after the first rise of temperature and before the initial chill. It had seemed to him that when Marmorek's serum is used freely it is a dangerous remedy. He had taken cultures from a great many cases and had submitted them to bacteriologists, and had convinced himself that he could not personally get a culture with certainty from the uterus without contamination from the vagina, except by making scrapings from the uterus and requesting the bacteriologist to make cultures from the interior of some of the larger pieces removed.

DR. RICHARD C. NORRIS, of Philadelphia, said that he had treated a number of cases with streptococcus serum that he had directly imported. Success in this treatment would only come when the bacteriologists were able to separate the different species and we knew more about their natural history. The very fact that most scientific medical men believe in the antitoxin treatment of diphtheria seemed to argue for a limited field of usefulness for the antistreptococcic serum. In puerperal septicemia, when the streptococcus has invaded the organism sufficiently to give rise to fever and other symptoms, there is a rapid multiplication of the organism in the circulation, and hence it could hardly be expected that much could be accom-

plished by the treatment at that late stage. We could only hope by the injections of the serum to fortify Nature for a few hours until she could eliminate the poison. If it is essential to have a bacteriological diagnosis the value of the treatment in the hands of the general practitioner will be almost nothing.

DR. WILLIAMS said that in obtaining the uterine lochia for bacteriological examination the external genitals and the hands of the observer are carefully sterilized. The woman is then placed in the Sims position and a sterile Sims speculum is inserted. With bullet forceps the uterus is brought down and the cervix is wiped off with sterile cotton. A uterine culture tube sterilized by dry heat is inserted carefully into the cervix under the guidance of the eye and the lochial uterine discharge is aspirated into the tube. This technique had given extremely satisfactory results.

DR. FRY, in closing, said that the examinations in his cases had been made by Dr. Carroll, the pathologist of the hospital, and consequently he was unable to state the exact technique employed. He appreciated the value of local treatment, but always hesitated a good deal about using the curette in these cases for fear of breaking down the protecting zone; it was only indicated when the offensive odor pointed to a sapremic condition and to the presence of material which should be removed. He believed more harm was done by the curette in streptococcic inflammations than by any other one method of treatment.

INVESTIGATION OF ANTISTREPTOCOCCIC SERUM TREATMENT.

On motion of DR. PRYOR, the following committee was appointed to report at the next meeting of the Society regarding the value of the antistreptococcic serum: DRS. FRY, WILLIAMS, REYNOLDS, and PRYOR.

Officers and Place of Meeting.—DR. JOSEPH TABER JOHNSON, of Washington, D. C., was elected President of the Society, and it was decided to hold the next annual meeting in Philadelphia on the fourth Tuesday in May, 1899.

REVIEWS.

TWENTIETH CENTURY PRACTICE. An International Encyclopedia of Modern Medical Science. By leading authorities of Europe and America. Edited by THOMAS L. STEEDMAN, M.D., New York City. In twenty volumes. Vol. XIV., pp. 600. New York: William Wood & Company, 1898.

This volume is devoted to infectious diseases. Each subject is very exhaustively presented. F. Forchheimer, of Cincinnati, takes up one hundred and ten pages with scarlet fever, and A. Jacobi writes upon cholera infantum. Besides the diseases familiar to us in this climate, there are sections on Asiatic

cholera, dengue, beri-beri, miliary fever, and Malta fever. Miliary fever is an endemo-epidemic affection confined almost entirely to certain parts of France, Italy, Germany, and Austria, and characterized by profuse sweating, a peculiar eruption, and certain special nervous symptoms. This fever is no doubt the direct descendant of the "English sweating sickness," or the sweating sickness of the sixteenth century, which in those days ravaged areas far beyond the regions above mentioned. Malta or Mediterranean fever is a disease of long duration, characterized by fever, profuse sweating, constipation, frequent relapses, often accompanied or followed by pains of a rheumatic or neuralgic character, and sometimes swelling of joints or orchitis.

H.

CATAPHORESIS, OR ELECTRIC MEDICAMENTAL DIFFUSION, AS APPLIED IN MEDICINE, SURGERY, AND DENTISTRY. By WILLIAM JAMES MORTON, M.D., Professor of Diseases of the Mind and Nervous System and Electro-Therapeutics in the New York Post-Graduate Medical School and Hospital, etc., etc. Pp. 254. New York: American Technical Book Co., 1898.

This book is an exposition of the method of medication based upon the peculiar characteristic possessed by an electric current of driving drugs held in solution into human tissue. This method was first applied by the author in dentistry, where cocaine was driven through dentine—the hardest substance in the economy—to the pulp within the tooth, perfect anesthesia being the result. The principles upon which this method depends, and its applications in medicine and general surgery, are set forth. It can be used in microscopic work for the electric staining of tissue. Appropriate apparatus is fully described.

MASSAGE GYNÉCOLOGIQUE. Par GUSTAVE DE FRUMERIE. Pp. 175. Paris: G. Steinheil, 2 Rue Casimir-Delavigne, 1897.

The author is both a physician and a masseur. This work, therefore, presents a practical demonstration of scientific ideas. The method considered is that of Thure Brandt. The author believes it applicable in a great variety of cases—*e.g.*, disorders of menstruation, periuterine hematocele, prolapse, simple chronic endometritis with pain and leucorrhea, etc., etc. It would seem that some of the movements would hardly be practicable except as a very last recourse. There are many illustrations.

TRAITÉ DE L'ART DES ACCOUCHEMENTS. Par S. TARNIER et P. BUDIN. Tome Troisième—Dystocie Maternelle. Pp. 754. Paris: G. Steinheil, 2 Rue Casimir-Delavigne. 1898.

This is an exhaustive treatise on the difficulties and the accidents of labor such as arise from deformities and other pathological conditions in the mother. The deformities considered are abnormal conformations of the pelvis; pelvic

deformities due to excessive pliability of the bony tissues (*e.g.*, rachitis and osteomalacia); abnormal pelves resulting from spinal curvatures, and from faulty union of the spine with the pelvis; malformations in the relation of the pelvis to the sacrum, coccyx, femur, etc.: anomalies in the development of the bony pelvis; and atypical deformities. Difficulties due to separation of the parts of the symphysis, to anomalies of the expulsive forces, to abnormalities of the external genitals and the perineum, to lesions of the cervix and uterus, to abdominal and pelvic tumors, to ruptures, hemorrhages, and eclampsia, are minutely considered. A final chapter is devoted to complications which might suddenly arise during labor—*e.g.*, fracture of the sternum or the ribs, subcutaneous emphysema, visceral or vascular ruptures, etc. There are one hundred and sixty-eight very good illustrations.

YELLOW FEVER. Clinical Notes by JUST TOUATRE, M.D. (Paris), former Physician-in-Chief of the French Society Hospital, New Orleans; Member of Board of Experts, Louisiana State Board of Health. Translated from the French by CHARLES CHASSAIGNAC, M.D., President New Orleans Polyclinic, Editor *New Orleans Medical and Surgical Journal*, etc. Pp. 206. New Orleans: New Orleans Medical and Surgical Journal, Limited, 1898.

This monograph takes up the clinical side of yellow fever and discusses in a very practical way its diagnosis and treatment. In diagnosis, the divergence between the pulse and temperature and the progressively falling pulse rate are considered pathognomonic. In treatment, the author, a clinician of wide experience, believes strongly in absolute rest, fresh air, cleanliness; calomel at start, and daily enema, no other drugs; persistent cold sponging or bathing; no food for first three days, and as much cool vichy as the patient can be made to take.

DE L'EXTIRPATION TOTALE DE L'UTÉRUS PAR LE VOIE VAGINALE. Par R. PICHEVIN. Bureaux de la Semaine gynécologique, 5 Rue Hautefeuille, Paris. 1897.

In this work of two hundred pages the technique of vaginal hysterectomy for adenoma, cancer, fibroma, prolapse, inversion, and lesions of the adnexa is considered. A historical résumé takes up one-fourth of the book. There are twenty-eight very good illustrations. An ingenious method of ligaturing is described.

BRIEF OF CURRENT LITERATURE.

Thrombosis and Embolism during the Puerperium.—In 1894 Mahler¹ published an essay upon thrombosis and embolism during the puerperium, based upon observations in the Dresden Maternity Hospital, and which is contained in the

second volume of the hospital reports of that institution. He first drew attention to the absolute necessity of watching the pulse, as the pulse, more than the temperature, is the danger signal of impending complications. Careful observations of a large number of cases had shown, again and again, that the gradual acceleration and step-like ascent of the pulse curve, not proportionate to the existing temperature, foreshadowed an existing infection and the probability of an approaching thrombosis. This observation has been confirmed to a great extent by the present report, and through observations in the Berlin Maternity Hospital published by Gessner. Gessner found this complication especially frequent in cases of cancer and fibromata of the uterus. The other symptoms constantly present, according to both authors, are violent headache, tearing pains along the course of the veins of the lower extremities, slight attacks of dyspnea, and pleuritic pains—all symptoms foreboding great danger and giving a serious aspect to the case. Besides these symptoms, Mahler heard, in cases of pulmonary thrombosis, a blowing sound over the pulmonary vessels. Both Mahler and Gessner lay the greatest stress upon the absolute necessity of keeping the patient quiet if one or all of these symptoms have made their appearance. In the present paper Singer, a former interne of the Dresden Clinic, publishes the observations of that institution during the last four years, and reports 35 new cases of embolism and thrombosis following delivery. There is hardly a more alarming complication following childbirth. It appears like a thunderbolt out of a clear sky, and without notice changes hopefulness into fear and apprehension. Singer's report confirms the preceding observations, and he also strongly advises the careful watching of the pulse curve. The acceleration of the pulse preceded, in about ninety per cent of the cases, all other symptoms of an impending thrombosis. The more frequent pulse is due to an increased circulatory resistance and is not caused solely by infection. The rise in temperature is preceded by the acceleration of the pulse, and the latter continues rapid after the temperature has returned to normal. Another early symptom is shooting pains in the lower extremities, becoming more aggravated when moving about. As to the etiology of this complication, inflammatory causes are ascertained in 23 out of 35 cases. In all these cases the inflammatory changes preceded or accompanied thrombosis, and bacteria could be demonstrated in the secretions. Besides these, localized peritonitis, parametritis, and ulcerations of the genital tract and fetid lochia were present. The infectious germs consisted of 12 cases of typical gonococci (Gram) and three cases each of streptococci and staphylococci. In a few cases there existed a mixed infection consisting of gonococci and streptococci. Although the great frequency of gonococcus infection is surprising, it is most likely still more prevalent than is shown by these examinations, because if a test for gonococci fails this does not by any means prove their absence. The great tendency of gonococcus infection to spread beyond the uterine

veins and to invade the circulation at large is made plausible through the investigations of Wertheim, who has shown that gonococcus infection, contrary to former belief, often does not remain localized, but has a tendency to spread by means of the veins and lymph channels to the neighboring organs. These observations prove that puerperal infection should not always be charged against the attending physician, but that such an infection is not infrequently due to a gonorrhea which had existed prior to childbirth, and to which the puerperal state presents the best possible conditions for spreading.

Air Embolism following Placenta Previa.—Zorn² reports the case of a XIIpara to whom he was called on account of hemorrhage occurring at or near full term. Vaginal examination showed the os nearly fully dilated and the lower uterine segment occupied by the placenta; slight labor pains; head above inlet. Podalic version after perforation of the placenta; careful extraction; removal of the placenta accompanied by only slight loss of blood. Condition good until three hours post partum, when symptoms of collapse suddenly appeared. Improvement after administration of stimulants. Collapse reappeared twice at short intervals, and, in spite of proper medication, the woman perished about four hours post partum. The subsequent postmortem demonstrated the absence of any injuries to the genital tract. The uterine vessels and also the right heart showed the presence of large quantities of air, and, in the absence of other pathological changes, the diagnosis of the case as air embolism appears justified. These cases are exceedingly rare, as Zorn found only 5 others in literature.

Treatment of Puerperal Fever.—R. S. Martin³ believes that puerperal fever can be prevented in a measure by thorough cleanliness. In all cases of sepsis the cause, if possible, should be removed. Local treatment must consist of asepsis. If bichloride is used it must be followed by normal salt solution or sterilized water. The curette should be used cautiously—a blunt one if labor be at full term, a sharp one after abortion. If curettage is performed, pack uterus with sterilized gauze. The constitutional treatment must be decided upon according to the case. In most cases calomel is indicated. Strychnia is indicated if pulse is quick and weak. Plenty of good whiskey and strychnia, in Martin's opinion, is the most important drug we can use. Quinia, combined, in some cases where temperature is high, with acetanilid or phenacetin. If the last two are used their effects must be carefully watched on the pulse. Ice bag over lower abdomen is of great value if there be much pain and a high temperature. In all cases support the patient with plenty of good milk, peptonized if you prefer, beef peptonoids, bovine, somatose, etc.

J. P. Roughton⁴ reports a case of puerperal fever treated with antistreptococcic serum. The patient died four days after the first injection of the serum. He wishes to point out that besides the use of the serum the very strictest possible

antiseptic precautions were taken, both as regards the instruments used and the hands of the operator.

Puerperal Eclampsia.—T. G. Stevens⁴ makes a diagnosis of this trouble from true epilepsy which is not accompanied by albuminuria, has not the same prodromata, is not associated with a rise of temperature, and, as a rule, has a definite history of previous attacks; from meningitis which is accompanied by vomiting, optic neuritis, opisthotonos, and rise of temperature before the convulsions; and from hysteria which is not accompanied by albuminuria, never by incontinence of urine or feces, in which unconsciousness is rarely absolute and in which there is no rise of temperature, and the movements of which are very irregular and do not as a rule in the least resemble epilepsy. As a routine treatment for a given case he would suggest the following: Give chloroform or keep the patient under morphia, and also give the bromide and chloral per rectum. Protect the patient from injury. Induce labor. Bleed if the pulse is hard and the patient is plethoric. Give a hot wet pack or bath. Dry-cup the loins and then put on linseed-meal poultices. Give 2 minims of croton oil on a bread crumb placed on the tongue. In a large proportion of cases a good result will be obtained if treated in this manner. Even with all this treatment, however, there are, unfortunately, cases which do terminate fatally; but, as far as we are concerned, we cannot recognize them beforehand, and so we must not omit one item of the treatment.

Pseudo-eclampsia.—Burckhard⁶ reports the case of a primipara who, after a normal confinement, experienced, five days post partum, a chill, followed by a moderate rise of temperature and a convulsive attack resembling an eclamptic paroxysm. These attacks repeated themselves during the next few days with great frequency. There was, however, never an absolute loss of consciousness. Albuminous urine was only temporarily present. Besides this the patient had partial paralysis of one side and considerable decubitus. This rather peculiar array of symptoms, together with extensive herpes labialis and slight pulmonary changes, led to the diagnosis of an irregular pneumonia, and the convulsive attacks were explained and thought to be symptoms of intoxication from the pneumonia bacilli circulating in the blood current.

Extrauterine Pregnancy and Eclampsia.—Holst⁶ reports a case of ectopic pregnancy occurring in a primipara 23 years old, and which was complicated by a severe attack of eclampsia. The diagnosis of extrauterine pregnancy was not made until some months later, when the tumor broke down and discharged fetal parts per vaginam.

Transmission of Tuberculosis by Means of the Placenta.—Auche and Chambrelent⁷ report the case of a woman suffering from extensive tuberculosis and who died three days after a premature confinement (seventh month). The placenta showed numerous tubercular nodules containing tubercle

bacilli. Rabbits and guinea-pigs inoculated with these nodules contracted general tuberculosis. The child lived twenty-six days, and at a postmortem tubercular nodules were found in the lungs, liver, spleen, and endocardium containing typical tubercle bacilli. Animal experiments with these organs also produced general tuberculosis.

Pregnancy and Tuberculosis.—C. E. Paddock^{*} believes that pregnancy exerts an unfavorable influence upon tuberculosis in the majority of cases; that the disorder remains progressive and is not arrested; and that in exceptional cases only, as in advanced tuberculosis with the child viable and mother nearly moribund, is the obstetrician justified in terminating pregnancy, and then only after a consultation with two or more physicians.

Dicephalus Dibrachius.—Simmons² reports the postmortem examination of a case of dicephalus dibrachius presented by Brown to the Hamburg Medical Society. He found two distinct vertebral columns, which united in the pelvis. Thus there existed two distinct central nervous systems; two esophagi and two stomachs; also two separate duodeni uniting 4 centimetres below the pylorus, there forming a single intestinal tract; the bile duct emptied at the point of junction; a double pancreas; a single but deformed liver. The other abdominal organs were not double. In the chest Simmons found a double trachea with two pairs of lungs. Interposed between these organs, a heart, consisting of one auricle, in which emptied the pulmonary and two venæ cavæ superior and one inferior. The two ventricles were separated by a perforated septum. Dicephalic monstrosities are exceedingly rare. The statistics of the city of Hamburg during the years 1872 to 1896 showed 2,300 monstrosities, but not a single case of dicephalus.

Vaginal Cysts.—J. E. Stokes^{*} briefly recapitulates the etiology and structure of true vaginal cysts as follows: 1. *Size.*—The size of cysts of the vagina varies from a pea to that of a small orange. Those cysts which are larger are generally found to have arisen without the vaginal tissue. The most common locations are the posterior wall about the median line, the lateral wall, upon either side, in the sulcus formed by the junction of the posterior and lateral walls, and the anterior wall, suburethral area. 2. *Appearance.*—The appearance of the cysts *in situ* is of importance, as it not only aids in showing the etiology of the cyst—cysts without the vaginal tissue being more apt to be conical in shape—but it also aids in making the differential diagnosis. The vaginal mucosa may be smooth or thrown into ridges, the latter signifying an uneven pressure upon the cyst wall. 3. *Macroscopically.*—The smaller cysts generally resemble a white grape, but may be of a dark-brown color, the larger ones being generally of a dark opaque color. The walls may be thin or markedly thickened. 4. *Symptoms.*—The smaller cysts seldom if ever give rise to any symptoms. The larger cysts may produce painful and frequent

urination, painful defecation, dysmenorrhea, dragging pains in the back, difficult locomotion, and dyspareunia. If decidedly large they may obstruct labor. 5. *Diagnosis*.—A diagnosis is generally made without difficulty. The possibility of connection with the bladder or rectum or the presence of a hernia should always be borne in mind. 6. *Treatment*.—Always excise the cyst when possible; if impossible to excise it wholly, excise the protruding portion of the cyst (Schröder), or incise it if it is discovered during labor. 7. *Structure*.—

(a) The cyst cavity may have a lining epithelium of the stratified squamous low cylindrical or high cylindrical ciliated variety, the type of epithelium being determined by the origin and possibly the position of the cyst. (b) Those cysts which have teat-like projections into the cavity of the lining epithelium have probably been cut on the slant (Kleinwächter). (c) The walls may be thick or thin, and may contain connective tissue, muscle fibres, and a rich blood supply, also a slight infiltration of round cells and polymorphonuclear leucocytes. (d) The denseness of the walls may depend not only upon some inflammatory process, but also upon the pressure which has been exerted upon the wall. 8. *Contents*.—The contents may be thick, tenacious fluid, or thin, clear, watery, negative bacteriologically, and having only a few cell elements microscopically. 9. *Etiology*.—The histological examination showed that cysts of the vagina may be classified as follows: (a) inclusion cysts, (b) cysts of embryonic tissue origin, (c) cysts of glandular origin. (a) Inclusion cysts, due to the epithelium being included within the raw surface, following a traumatic lesion of the vagina. This is the most probable origin of cysts found on the posterior wall of the vagina, though a cyst of such an origin may occur in any portion of the vagina. (b) Cysts of embryonic tissue origin are most probably due to either the fetal remains of a portion of the lining epithelium of a Wolffian duct or to a dilatation of the duct itself, the most likely position for cysts of such an origin being upon either lateral wall. (c) Cysts of glandular origin are due to the dilatation of one or more glands of the vagina. If Von Preuschen's theory of glands be accepted, then the dilatation may be considered to have taken place in the branching portion of the gland.

Retroflexion of the Uterus.—Preiss¹⁰ has applied Elicher's operation for retroflexion of the uterus with a slight modification, and reports that the results were good. Preiss' modification consists in the removal of a wedge-shaped piece out of the anterior cervical wall, extending above to the angle of flexion and below to the cervical vaginal junction. This modification obviates abnormal thickening of the anterior cervical wall, which is an undesirable complication of Elicher's operation.

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DISEASES OF CHILDREN.

Antistreptococcus Serum.—Louis Fischer¹ reviews the literature of this subject and presents some of his own cases. The author had been advised by Prof. Baginsky not to use the serum for the present, the latter saying that it is not a specific in the treatment of scarlet fever in the sense that antitoxin is advised in the specific treatment of diphtheria. In his text book, however, Baginsky distinctly says that "he believes that it does no harm." The author's experience is limited to 19 cases of scarlet fever, erysipelas, including 1 case of meningitis and 1 of puerperal septicemia. One patient, a girl with septicemia, recovered, the author believes, owing to rest and antiseptic treatment, and not to the influence of the serum. Of the remaining cases 17 ended fatally. A child having a mild form of scarlet fever, and which was injected with the serum, did not show either good or bad results from this treatment, and would probably have recovered even if no serum had been used. Positive effects, specific in character, as we frequently note in the treatment of diphtheria with antitoxin, the author cannot report. He believes, from what experience he has had, that we are not justified in either using or recommending the use of antistreptococcic serum, and that the indiscriminate sale of this serum should be prohibited until clinical experience has established the true therapeutic value of the serum.

Deaf, Training of the.—An editorial² upon this interesting subject calls attention to the fact that in early times it was supposed that language could be acquired only by means of the ear, and in consequence afflicted children were allowed to grow up without any attempt being made to educate them, and they were practically ostracized. In some countries the prejudice was carried so far that if at 3 years of age a child was still deaf and dumb its life was destroyed. In these days, however, almost every deaf and dumb child not only receives an ordinary elementary education, but also manual instruction which in many instances enables him to earn his own living. This country is well to the front in providing ample facilities for the instruction of deaf-mutes. The Columbia Institute at Washington is not only the sole college in the world for the deaf, dumb and blind, but it is also the only institution where such individuals can acquire a complete education. The total number of schools for the deaf in different portions of the globe is 546. In Africa, Asia, and Australia there are 17; in Europe, 420; and in North and South America, 109. In Great Britain the boarding-school system is the favorite one; in Germany the day schools predominate. In the rest of Europe the boarding schools contain about twice the number of pupils that are found in the day schools. In the United States the system in vogue is almost wholly the boarding. The great point of difference between the European schools for the deaf and those in this country is in the mode of instruction. In Europe the teaching by articulation and lip reading prevails, while in this

country the sign and manual language is still the method of instruction chiefly relied upon.

Hemophilia in the Newly-Born.—Wittner³ reports the case of an 8-days-old child in whom persistent hemorrhage developed after circumcision, necessitating the use of the Paquelin cautery to check it. Two other boys in the family had died of hemorrhage following circumcision, and the maternal grandmother had lost eight sons from the same cause. The little patient got well.

Hyponomoderma.—Kaposi⁴ proposes this name for a skin disease which he describes as occurring in a child of 2 years, and consists in the appearance of raised, red patches from which a red straight or zigzag line projects and lengthens indefinitely. The lesions appeared on the shoulder, thigh, and back. This line is found to be due to the growth of a parasite, *gastrophilus equi*. Suppuration does not accompany the disease, but vesicles and pustules may do so. *Styrax* or balsam of Peru is recommended as treatment. The condition has been described under the name of creeping disease.

Intussusception in Children.—Edward Martin⁶ reaches the following conclusions after a statistical study of this affection based on unreported cases and the report of a successful operative case: 1. The affection is a rare one in any one locality or in any individual experience. The general impression among medical men to the effect that it is common has not the support of either hospital records, vital statistics, or personal inquiry. 2. Gastro-enteritis is a distinct predisposing factor. 3. The diagnosis of infantile intussusception from severe enterocolitis in the absence of tumor may be quite impossible. Fortunately tumor is present in over eighty per cent of cases. Often it has not been found because search has not been made for it. Sudden and violent onset, frequent small blood-stained mucous passages, and the rapid minimizing of the quantity of feces passed, would suggest intussusception. Under such circumstances palpation should be practised, one finger being passed into the rectum, the other fingers of the other hand being applied to the abdominal surface. When there is reasonable doubt the child should be relaxed by ether before such examination is made. The tumor is not necessarily on the left side, being found in a small percentage of cases to the right. 4. The first attempt at reduction should be thorough and final. This is most likely to be successful if practised upon the thoroughly anesthetized child. The method of choice is the slow injection of normal saline solution by gravity at a temperature of about 102° F. and under a pressure of at first four feet—not greater than eight feet after ten to fifteen minutes. Inversion and gentle massage aid in accomplishing reduction. 5. Reduction by injection should not be attempted in hyperacute cases which have lasted more than twenty-four hours, nor in acute cases which have lasted twice this time. Immediate operation is safer for such cases. 6. Reduction by injection having failed, there should be immediate recourse to

celiotomy and direct disinvasion; or, if this procedure is impossible, ligation and resection of the adherent and sloughing mass practised through a small incision through the intussusciens, and union of the divided bowel as in the Maunsell method. The portion of the gut cut away may be delivered through the anus.

Lymphatism, Scrofula, and Mineral Waters.—In the treatment of this disease R. Durand Fardel⁷ states that if he were obliged to make a choice he would rather dispense with all other medication, provided that he could make use of sea baths and hydro-mineral treatment. Lymphatism is a diathesis, a constitution and temperament of the organism, an hereditary disposition. Upon this ground develop cutaneous and mucous lesions which constitute scrofula. The natural tendency of this group of symptoms appears to be attenuation with age, and development into arthritic disorders in the adult, with a special predisposition to local or general invasion by tuberculosis.

Seaside treatment is certainly one of the most valuable resources in this condition, but to derive the greatest benefit from it we must know how best to use it. Its action is due almost entirely to continuous inhalation of the sea air, with its purity, special humidity, ozone, and chlorine and iodine held in suspension. The sea baths are excellent, but are to be considered as a species of cool douche, a hydrotherapeutic measure attended by reaction and indicated in special cases. In the case of poor patients the superior hygienic conditions and better nourishment in the seaside sanatoria over their usual daily conditions play a large part in their improvement. Seaside treatment should not be indiscriminately applied to all cases of lymphangitis and scrofula. It is usually in childhood that its benefits are the most apparent, and up to the age of puberty it is rarely contraindicated. In some children, however, a certain latent nervous irritability seems to develop at the seaside, manifesting itself in sleeplessness, loss of appetite, and general nervous symptoms. Cardiac and pulmonary lesions prohibit sea baths, and even sea air if it be too cold or too irritating. It goes without saying that acute intercurrent conditions, in especial any form of nephritis, forbid active seaside treatment. The author discusses the comparative value of various European resorts. Beaches composed of very fine sand should be avoided by scrofulous patients suffering from blepharitis and conjunctivitis.

The mineralized water treatment of lymphangitis is indicated by general pathogenic conditions and special localization of the disease. Chlorinated and sulphurated waters, as well as those in which iodine and arsenic predominate, are the waters chiefly used. The chlorides of sodium constitute the specific treatment in cases where the diathesis plays the chief rôle; their action is alterative, modifying the functions, tonic to the general system, resolvent as regards existent lesions. According to modern researches, they increase the disassimila-

tion and oxygenation of nitrogenous matters, and exert a decided action on the tissues rich in phosphorus and on those rich in both nitrogen and phosphorus. This latter is a valuable fact to remember in connection with extensive lesions of the osseous system, and in diseases affecting the connective and fibrous tissues connected with affections of the glands, in periostitis, etc. A list is given of French watering places adapted to the treatment of the disease under consideration. For special lesions developing, so to speak, upon the scrofulous groundwork, chlorinated waters are always indicated, but sulphurous waters often seem the best adapted to meet special indications. They act with rapidity upon skin lesions, and it has been noticed that they often overcome mucous and peripheric manifestations of ganglionic engorgement, even when the ganglion itself remained affected or yielded only to persistent treatment with the chlorides of sodium. The earliest and most frequent manifestations in those subject to lymphatic disease are the mucous and cutaneous lesions, which at the present date we consider to be due to invasions, by an external agent, of a prepared ground. These are rhinitis, ophthalmia, blepharitis, otorrhea, etc., and the innumerable dermatoses. The author names the French watering places suitable to the treatment of each of these affections.

Measles, Value of the Buccal Eruption for Early Diagnosis.—E. Libman^{*} adds the results of his experience to the data given by Koplik and by Slawyk upon this subject. Koplik states that the spots are absolutely diagnostic of measles, that they occur during the invasion period and begin to disappear as the skin exanthema reaches its height. The author has observed 50 cases of measles with reference to this sign. In a first group of 12 cases, in every case the spots described by Koplik were present in large numbers on the buccal mucous membrane and in some cases on the lips. The children with the measles eruption already markedly developed had, in general, fewer spots. In a second group of cases the first case, a child of 6, was admitted to the ward with a history of having been sick three weeks with fever, cough, and pain in the chest. When first seen he had no coryza and no conjunctivitis. The physical examination revealed a slight bronchitis and a mitral regurgitation with hypertrophy of the right ventricle. The temperature was 102.8° F. The diagnosis seemed doubtful until on examination of the mouth the measles spots were seen. The child was isolated, and two days later a typical measles eruption developed on the chest and neck. After the occurrence of this case the mouths of all the children in the ward were examined daily. Twelve days later the spots were seen in another child, and in a short time thereafter in nine other children, all of whom developed the measles eruption in the succeeding twenty-four to forty-eight hours. The children not presenting the spots did not develop measles. The value of this sign in an early diagnosis of measles is very great. In children already suffering from some disease a rise in tempera-

ture is not of great diagnostic value, and there is often absence of catarrhal symptoms at the invasion, and when the eruption appears in such cases it is often atypical in arrangement and distribution and pale in color. In children suffering from broncho pneumonia or empyema, the question may well arise whether we have to do with one of the exanthemata complicating the original disease, or whether the rash is due to drugs. In diphtheria cases we may be in doubt as to whether there exists an antitoxin rash or a complication with measles. From a consideration of these points it becomes clear what a great aid in the prevention of measles epidemics the Koplik spots are. The mouths of children applying for admission to hospitals should regularly be examined for the measles spots, just as their throats are looked at for membranous deposits and their skin for desquamation. Spots resembling the central whitish part of the measles spots have been seen on the mucous membrane of the cheeks in cases of purpura rheumatica and of secondary syphilis, but they could be easily distinguished by their larger size and by the absence of the surrounding congested zone.

Milk.—Rowland Godfrey Freeman¹ discusses this question: "Should all milk used for infant feeding be heated for the purpose of killing germs? If so, at what temperature and how long continued?" He sent out questions to various members of the American Pediatric Society and received 37 answers, of which 34 were categorical and 3 in the form of letters. From the nature of the replies received the predominating opinion appears to be that raw milk would be the best food were it possible to obtain it clean, while a considerable number are evidently willing to take their chances with raw milk during certain seasons of the year and under certain conditions of dairy hygiene. One answer, which coincides very nearly with the author's views, comes from Dr. Victor C. Vaughn, of the University of Michigan, and is as follows: 1. I do not think that milk is rendered more digestible by sterilization or pasteurization. 2. Sterilization or pasteurization is not advised for the purpose of rendering milk more digestible. 3. If milk could be obtained from healthy animals under complete aseptic precautions, I do not think it would be necessary or desirable to have it heated before feeding it to children. 4. Practically, sterilization or pasteurization is imperative because milk is not obtained at all times from healthy cows, and very rarely, if ever, under aseptic precautions. 5. I prefer pasteurization to sterilization. Pasteurization should be carried out at a temperature of 155° to 158° F. When milk is heated to 160° F. it is so changed that a marked difference in taste is produced. 6. I think that a temperature of 155° to 158° F. maintained for fifteen minutes is sufficiently active to kill toxicogenic germs that may be present, provided that the milk, after having been heated, be kept at a very low temperature. The keeping of milk at a low temperature after heating and before it is fed to the child is, I think, absolutely necessary, because we know

that even boiling does not destroy the spores of certain harmful germs in milk; but these spores do not develop at a low temperature, and there is reason for believing that these germs do not develop in the body. 7. If milk is sterilized, I think fifteen minutes long enough time. 8. There are practical disadvantages in heating milk for sterilization. Some of these practical disadvantages are inherent, and others are accidental and avoidable.

The author does not think that our dairy hygiene, even under the best circumstances, has reached a point where it can produce a raw milk which is an absolutely safe food. The teats of the cow are liable to contamination from the hair covering them and the belly, from contact with the ground when the cow lies down, from loose fecal movements which dry on the udder and during milking are apt to fall as dust into the pail. Bacteria may also be contained in the milk ducts and are not always eliminated by throwing away the first milk from the teats. The milkman's hands are also a frequent source of contamination, the nature of his work during the day causing a thick callus which it is difficult to clean. His hands are used in handling manure and occasionally in waiting on some one sick with a contagious disease. The original contamination of milk up to the time of bottling, in well-conducted dairies where great efforts are made to obtain clean milk, rarely amounts to less than five thousand bacteria in each cubic centimetre. By the time such milk reaches the consumer the contamination is still greater; and if, as is usual, the milk is used during the twenty-four hours following delivery, it is apt to be very considerable before a fresh supply arrives, and is probably, as a rule, something between fifty thousand and five millions a cubic centimetre, or is, roughly, between three thousand and three hundred thousand a drop. It does not seem fair to put into an infant's stomach a food containing thousands of bacteria in each drop, these bacteria being of unknown quality and very possibly of dangerous and pathogenic nature. For the present, then, the author thinks that some form of sterilization must be used. A temperature of 68°C (155°F.) for thirty minutes, followed by rapid cooling, is the best. Such a temperature will destroy the germs of diphtheria, typhoid fever, and tuberculosis, and so many of the other germs present that a plate planted from milk so treated and kept at a laboratory temperature will usually show no growth in twenty-four hours. At the same time this milk has not been heated sufficiently to give it a "cooked milk" taste, and the temperature to which it has been exposed is more than ten degrees centigrade below that at which the chemical changes in milk due to heating are said to take place. Care must be exercised that approximately this temperature be sustained for half an hour, and equally that the milk be immediately and rapidly cooled and kept cool.

Nocturnal Manifestations of Disease in Children.—Lambert Ott^o states that in cases of disease occurring during

sleep, usually when the physician is absent, his attention is often misled by other factors visible during the day, and the mother fails to detect the cause of the child's restlessness and ill health. Among the diseases giving symptoms at night (although, of course, not at night alone) we have: 1. *Thread or pin worms*. These parasites migrate when the body is at rest, causing the child to toss about as if in great agony. A careful search will reveal the cause of the trouble. The remedy is cold salt-water injections, repeated several times in the same evening, the first injection opening the bowels, the second killing the worms. The treatment should be continued for ten days or more. 2. *Nocturnal hives*. One or two blotches may cause great disturbance. The eruption may appear at night only. Treatment consists in removing the cause, if ascertained, and in the use of gentle laxatives, a careful diet, and sponging with alcohol. 3. *Night terrors* may be due to exciting stories or to an elongated prepuce. Retract the prepuce, clean away the smegma, give a light meal for supper, avoid all excitement, remove seat worms if present, and, above all, have the child sleep in a cold room with sufficient covering so fastened that he does not lie uncovered if restless. With much time spent out of doors and an evening bath a cure will soon be effected. 4. *Nocturnal or unconscious masturbation*. This may occur, and may be due to an elongated prepuce or to cystic distension. Have the child sleep on back or side retract the prepuce and clean the corona, avoid constipation, and, if erections accompany cystic distension, have the bladder emptied several times during the night. 5. *Nocturnal enuresis*. The most prevalent cause is found in an elongated prepuce and a smegma-covered corona. Remove the coanal irritation and have the child pass water before going to bed and again at midnight. 6. *Nocturnal functional spasm or jerks*. This is usually reflex and due to some disturbance in the alimentary tract. Small doses of paregoric often repeated subdue them, but if fever occurs and no antispasmodic is given decided general convulsions soon follow. 7. *Nocturnal drivelling*. In children who have finished teething the trouble is probably associated with renal inadequacy, when, too little urine being secreted, urinary salts are retained in the blood, producing heavy sleep and a consequent relaxation by reason of which the salivary drivelling follows. Treatment consists in toning up the general health, liberal administration of lemon juice and sweet spirits of nitre, and in encouraging the child to drink large quantities of water. 8. *Nocturnal pains*. Earache and toothache often cause pains at night. The pains of childhood, apart from those of syphilis, hydrocephalus, acute inflammations, headache prodromic of the exanthemata, and local pains, are not common even during waking periods, and therefore less common during sleep. Some pains in children are annulled by the intense diversion at play, but during the quietude of sleep a subdued pain is more forcibly impressed upon the sensorium. Occasionally the joint pains of scurvy are nocturnal and discovered only during sleep.

Scurvy, Infantile.—The report¹ given by a committee appointed a year ago by the American Pediatric Society, consisting of Drs. Crozer Griffith of Philadelphia, Charles Jennings of Detroit, and John Lovett Morse of Boston, is interesting and instructive, and should be read in its entirety, an abstract necessarily failing to give a fair idea of so condensed a collection of facts. The committee received answers to their inquiries embodying observations of 379 cases. As to *race*, out of 372 cases there were 367 white, 4 black, and 1 Chinese. As to sex, 51 per cent male, 49 per cent female. As to age, the disease is most apt to develop between the ages of 7 and 14 months, inclusive. As to social position, 83 per cent of the cases occurred in private practice, 17 per cent in hospital practice. In 303 cases the hygienic surroundings were good, and often of the very best. The previous health, out of 285 cases, in 167 had been good. In 118 the child had suffered from various diseased conditions, digestive disturbances preponderating. This probably is an indication that the faulty diet which occasioned the scurvy produced the indigestion also. In 129 cases the family history is stated to have been good, in 97 negative, in 74 certain diseases were mentioned in the family. According to general opinion, the most important etiological factor is the dietetic one, consequently the committee paid particular attention to this point. In 275 cases the correspondent stated that there was reason to believe that the disease depended on the nature of the food used. A list is given of the food employed at or shortly before the time the symptoms of scurvy were observed, according to the reporters' replies. Treatment and its results are also fully discussed and the following conclusions drawn: 1. That the development of the disease follows in each case the prolonged employment of some diet unsuitable to the individual child, and that often a change of diet which at first thought would seem to be unsuitable may be followed by prompt recovery. 2. That, in spite of this fact regarding individual cases, the combined report of collected cases makes it probable that in these there were certain forms of diet which were particularly prone to be followed by the development of scurvy. First in point of numbers here are to be mentioned the various proprietary foods. 3. In fine, that in general the cases reported seem to indicate that the further a food is removed in character from the natural food of a child, the more likely its use is to be followed by the development of scurvy. The symptoms are treated of in detail. The first symptoms seen were reported as follows: Pain and tenderness, 145; affection of gums, 42; interference with motion, 36; anemia, 27; cutaneous hemorrhages, 22; swellings, 16; restlessness, 6; anorexia, 5; debility, 5; diarrhea, 5; constipation, 2; hemorrhage from nose, 1; hemorrhage from mouth, 1; hemorrhage from rectum, 1; hematuria, 3; "hematoma of tongue," 1; irritability, 3; vomiting, 1; fever, 1; opisthotonos, 1; sweating, 1.

From the answers received in regard to the presence or

absence of rickets, there does not seem to be evidence that the association of rickets and scurvy is at all intimate. Very possibly the same defect in diet which produced the one produced the other also, but the rapid recovery under treatment which the scurvy underwent did not apply to the rickets. This seems to indicate only accidental association of the two diseases, certainly not any causal relation between them. In the diagnosis the only disease for which infantile scurvy was repeatedly taken appears to have been rheumatism. In several instances the affection of the legs was supposed to be due to sarcoma. The apparent paralytic condition has also been the cause of error in some instances. As to duration, the disease is essentially chronic, its course terminating only on the institution of proper treatment. Twenty-nine of the 379 cases are reported to have died. In 2 of these death seems to have been remote from the attack of scurvy. Of the remaining 27 the causes, as enumerated by the reporters, are as follows: Exhaustion, 6; cerebral hemorrhage, 3; diarrhea, 2; bronchitis, 2; vomiting (?), 1; convulsions, 1; pneumonia, 4; malnutrition, 1; pulmonary hemorrhage, 1; ulcer of stomach, 1; syncope and nephritis, 1; doubtful, 4.

The minority report, signed by Augustus Caillé, is as follows: 1. From a study of this report, and from due consideration of other known facts, scurvy appears to be a chronic ptomaine poisoning due to the absorption of toxins. 2. It follows the prolonged use of improper food, and abnormal intestinal fermentation is a predisposing factor. 3. Sterilizing, pasteurizing, or cooking of milk food is not *per se* responsible for the scurvy condition. 4. A change of food and the administration of fruit juice and treatment of any underlying cause is the rational therapeutic procedure in scurvy.

Streptococcus Enteritidis.—E. Libman¹⁰ reports two cases of diarrheal disturbance in children in which the streptococcus isolated by Hirsch were present. In the feces it appears as a flattened coccus in short, straight chains or angular chains, the diplococcus arrangement being frequent. In sugar bouillon after twenty four hours there is a uniform cloudiness; after five or six days the upper part of the fluid clears. The growth is less active in ordinary bouillon. The average size of the cocci stained in fuchsin is $0.75\ \mu$ by $0.9\ \mu$. The coccus stains with Gram. On the surface of gelatin there is a slight, faint, translucent white growth. On agar plates the colonies, microscopically viewed, are irregularly oval, coarsely granular, with a finely dentated edge; the centre is darker and yellowish. Milk is acidified after one day and solidly coagulated after five or six. On potatoes there is a moderate growth, with active cultures, which appear in the form of isolated white colonies, which may later run together. On agar, covered with a coagulated layer of human blood serum, there is a very abundant growth. In such cultures the cocci are apt to be arranged in larger groups rather than in chains. The cultures thus obtained are very vigorous, giving, on agar and potatoes, thick,

creamy growths. With them milk is coagulated after one day. Mice fed with such cultures in bouillon had very frequent movements, consisting mainly of mucus, with a little pus, and in one there were some blood points. The mice died in varying lengths of time, from thirty-three to one hundred and three hours, depending on the number of generations from the cultures on serum the bouillon cultures were removed. The intestines, post mortem, always showed more or less marked inflammatory changes, and the cocci were found in the blood in small numbers. Subcutaneously inoculated, one cubic centimetre of such cultures caused the death of mice in from forty-eight hours to eight days. Those that lived over two or three days had diarrheal movements. Post mortem the cocci were found in the blood and in some of the movements.

Syphilis, Hereditary, with Saddle Nose.—Oettinger¹¹ reports the case of a baby who was said to be well at birth. Snuffles and an eruption began at the age of 4 weeks, and the nose gradually sank. No sequestrum had been seen. There was perforation of the septum and cicatricial distortion of the nose without and within. No history of syphilis could be obtained from either parent, and it is possible that there was a slight, unobserved infection of the father, or else the disease had been present in one of the grandparents and not in the parents. From the rapidity with which the deformity developed, it was probably due to a softening gumma of the nasal septum.

Syphilis, Tardy Hereditary, Diagnosis of.—G. Milian¹² says that in view of the frequent mistakes made in diagnosing this affection in children, it being often taken for tuberculosis and treated as such, to the great retardation of a cure, it is well to bear in mind the chief points in the diagnosis of the disease, as set forth by Fournier. These consist of the stigmata and the general history of the case.

STIGMATA.—The first thing which attracts attention is the miserable appearance of the patients, who are *infantile*. The complexion is grayish; they are slender and small in size; their teeth appear late; they do not walk until about the twentieth or thirtieth month. Puberty is delayed.

CICATRICES.—These are to be found around the mouth, in the nose, on the buttocks (the latter very indistinct), on the mucosa, the velum palati, and the throat. These symptoms are of importance in proportion to their size, number, circular form, semi-circular, serpentine, or polycyclic form, and roundness.

OSSEOUS DEFORMITIES.—The forehead may have three varieties of malformation: 1. The Olympian or rounded forehead. 2. Lateral projections. 3. En carène, a rare form, with a more or less prominent projection on the medio-frontal suture. The cranium may have hyperostosis or exostosis (which must be sought by palpation), or it may be asymmetrical or hydrocephalic. There may be transverse enlargement of the posterior part of the cranium—the *natiform cranium* of Parrot. The *nasal* deformities deserve notice. Of these there are two:

the major ones are caused by necrosis and produce a *retroussée* nose with a flattened base, or a "broken profile" nose in which the inferior segment appears to be pushed within the superior segment. The second variety consist usually in a flattening of the base of the nose. The palatine arch is exaggerated and ogival. The extremities of the long bones, as the upper end of the tibia, heads of the radius and cubitus, the malleoli, anterior extremities of the ribs, and the elbow, are often tumefied. The diaphyses of the long bones may also be affected. The tibia in especial is the bone which reveals the presence of syphilis. There may be tumefaction of the bone for a certain extent of its diaphysis, inequalities and nodosities of the surface, the transformation of the crest into an osseous surface, or an apparent curving in of the bone, which is, however, not really curved as in rachitis. We also find many bony lesions very similar to those of rachitis, so that Parrot was led to believe that this disease was essentially syphilitic. Fournier, however, holds that the rachitis is the result of the dystrophic influence of syphilis upon the system in general and the bones in especial. The articulations may be affected by chronic hydrarthroses or indolent deformative arthropathies.

TESTICULAR LESIONS.—These consist of simple atrophy, and sclerotic atrophy resulting from a double sarcocoele developed within the early months of life. The latter is characterized by the smallness of the organ, the hardness, and nodosities. The sarcocoele develops insidiously and without pain.

HUTCHINSON'S TRIAD of symptoms are as follows: 1. *Ocular inflammations*, as interstitial keratitis and iritis, which leave marks such as leucoma, synechia, and pseudo-membranous deposits over the pupil. Strabismus is common, and abnormal spots of pigmentation are seen in the fundus. 2. In the *ears* we see cicatrices or perforations of the tympanum, which testify to a previous otitis media. There is also a remarkable form of deafness possessing the following characteristics: it is brusque in its appearance and rapidly becomes complete and intense, without there being any appreciable lesion or any otitis: at an early age it causes muteness. 3. *Malformations of the teeth*.—Outside of delayed development, malformations of the maxillary bones, irregularity in the implantation of the teeth, permanent absence of some teeth, and persistence of the milk teeth, we have dental dystrophies, which may be arranged under four heads: (a) *Microdentism*, the incisors being usually the ones to remain tiny in size. (b) *Amorphism*, the teeth differing in some way from the usual physiological form. The malformations are partial and not systematic; there are deviations from the type (canines transformed into incisors), or real monstrosities (horn-shaped teeth, etc.). (c) *Dental erosions*. Those affecting the body of the tooth are irregular, punctiform depressions of a dirty grayish color; facets, or grooves which are *always horizontal*. Erosions of the free extremity of the tooth may affect the first molar, which is atrophied on the top and by use becomes worn flat; the canines, which have a V-shaped erosion or a conical atrophy of the

apex, and the incisors. These may have an angular groove, a saw-tooth edge, an atrophic thinness of the edge with antero-posterior flattening, general atrophy of the apex, or the semilunar closure. The so-called Hutchinson's teeth are of the last-named variety; the two superior median incisors are always the ones affected and their axes are oblique and convergent. The half-moon indentation is always exactly median, and usually bevelled at the expense of the anterior border. The body of the tooth has its angles rounded and is often short and narrow. Sometimes the type is reversed and it is swollen and large at the neck and narrow at the edge. (d) Finally, the teeth in hereditary syphilis are very vulnerable. They are easily injured; caries occurs at an early age, often causing premature loss of the teeth.

ARRESTED DEVELOPMENT.—In the children of syphilitics we usually find arrested psychical (backwardness, idiocy, imbecility) or physical development (harelip, talipes, genu valgum, asymmetry, monstrosities, dwarfs, giants).

A GENERAL HISTORY OF THE CASE is of the utmost value in the diagnosis of hereditary syphilis. We should ascertain whether the patient had any eruptions at an early age; whether there are ophthalmias, aural discharges, convulsions, epilepsy, pains in the bones, etc.; whether the father or mother was syphilitic; whether the mother has had many and consecutive abortions and still-births, and whether she has lost many children, and at what age.

Tetanus, Traumatic, Cured with Behring-Knorr's Tetanus Antitoxin.—Riese¹³ reports the case, which occurred in a boy of $3\frac{3}{4}$ years, the wound being a very superficial scratch on the chin. The use of the antitoxin was begun on the second day of the disease and was followed by improvement in four days. Although the knees remained stiff for a month, the boy recovered fully. It is interesting to note that, in common with other observers, the writer noticed an improvement only after the second antitoxin injection.

Tonsils as Entrance for Severe Infections.—Jessen¹⁴ reviews the literature of this subject and reports four adult cases of acute general infection following angina. Three infantile cases are reported as illustrating the fact that when adenoids are removed all "scrofulous" symptoms disappear, provided there has not been a second tuberculous infection. The author believes, therefore, that many cases of scrofula are nothing more than general infection from chronically inflamed tonsils.

Thigh Fractures in Children and Nurslings, Healing of.—Dollinger,¹⁵ having found all previously described methods unsatisfactory in young infants, has devised the use of two splints impregnated with plaster of Paris *in situ* and held in place by soft bandages, the hip and knee joints being flexed at an angle of 90° to 100°. The splints are removed daily, if necessary, and dried or renewed. In three cases in which the method was used two and three pairs were required. Two of the infants were newly-born, the other 2 years old. Union

occurred by the eighteenth and nineteenth days, and in one case not until the fourth week. The children can be easily carried about on a pillow and readily nursed.

Thread Worms in the Biliary System.—Mertens ¹⁶ quotes the case of a little girl, 5½ years old, whose illness began with vomiting, icterus, and abdominal pain. Worms were passed by the mouth and by the anus. The liver was enlarged. Ascites developed, with great prostration and death in less than a month. At the autopsy numerous abscesses were found in the liver and on the under-surface of the diaphragm. The bile ducts were all dilated and in a state of suppuration. The author reports two adult cases of his own, and calls attention to the importance of establishing the presence or absence of worms in the early stages of every case of icterus in children or adults.

Varicella.—Von Rokitsansky ¹⁷ gives a clinical lecture with especial reference to the differential diagnosis between varicella and variolâ. The chief points of difference are the short incubation stage without prodromal symptoms in varicella, the appearance and spreading of the eruption in an irregular fashion, the face being little attacked, and the rapid development of papules into vesicles. In variola, on the contrary, the vesicles and pustules require six days for their full development. The more rapid disappearance of the eruption and the absence of severe general symptoms in varicella are also points to be observed.

Whooping Cough.—Wm. Thornton Parker ¹⁸ indorses Dr. Dawson's use of small and repeated doses of quinia sulphate in *solution* in this disease. He gives two, four, and six grains to the ounce, a teaspoonful every two hours. The quinine is both antiseptic and tonic. In his cases the paroxysms almost entirely ceased in thirty-six or forty-eight hours, and the recoveries were much better than by the use of the old-time remedies, as belladonna, etc. Hygienic treatment is of the greatest importance; a change of air is essential, sea air being usually *the* atmosphere for children suffering with pertussis. A bread-and-milk diet three times a day is about all that should be given in the way of food, with an occasional dropped egg on toast or cup of beef tea. Patients must be isolated and they must not be dosed, although twice a week a mild aperient should be given before breakfast. A warm bath twice a week and a daily morning sponge will be found beneficial.

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ITEM.

THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS will hold its eleventh annual meeting at the Monongahela House at Pittsburg, Pa., Tuesday, Wednesday, and Thursday, September 20, 21, and 22, 1898. The morning and afternoon sessions of each day will be devoted to the reading of papers and their discussion.

Papers Promised.—1. President's address, Charles A. L. Reed, M.D., Cincinnati.

2. Paper by Clinton Cushing, M.D., San Francisco.

3. Septic Infection of Ovarian Cystoma, Charles Greene Cumston, M.D., Boston.

4. Recent Experiences with the Alexander Operation, H. E. Hayd, M.D., Buffalo.

5. Nursing in Abdominal Surgery, Joseph Price, M.D., Philadelphia.

6. Carcinoma of the Breast, W. F. Westmoreland, M.D., Atlanta.

7. Operative Technique for Intraligamentous Ovarian Cystoma, D. Tod Gilliam, M.D., Columbus.

8. Organization of Major Operations in Private Practice, W. G. Macdonald, M.D., Albany.

9. Explanation of the Character of the Temperature in Appendicitis, Robert T. Morris, M.D., New York.

10. Pathological and Clinical Phases of Gall-stone, A. H. Cordier, M.D., Kansas City.

11. Some Facts in Regard to Uterine Fibroids, H. D. Ingraham, M.D., Buffalo.

12. Albuminuria complicating Gynecological Operations, Rufus B. Hall, M.D., Cincinnati.

13. Extrauterine Pregnancy with Specimen; Mature Fetus Borne Twelve Years, W. J. Asdale, M.D., Pittsburg.

14. Surgical Treatment of Morbid Conditions involving the Broad Ligaments, A. P. Clarke, M.D., Cambridge.

15. Paper by Walter B. Dorsett, M.D., St. Louis.

16. A second paper on the Surgical Treatment of Intussusception in Infants, with Cases, H. Howitt, M.D., Guelph, Ont.

17. Relation of Nervous Affections to Diseases of Female Pelvic Organs, B. Sherwood Dunn, M.D., Boston.

18. Ureteral Anastomosis, George H. Noble, M.D., Atlanta.

19. The Graver Forms of Nerve Disturbance, due to Organic Changes in the Genital Organs, W. H. Humiston, M.D., Cleveland.

20. Some of the Complications following Vaginal Hysterosalpingo-oöphorectomy in Pelvic Suppuration, F. Blume, M.D., Allegheny.

21. The Question of Intra-abdominal Drainage, Edwin Walker, M.D., Evansville.

22. Report of a Case of Double Uterus and Vagina with Pregnancy in One Horn; Excision of Vaginal Septum, F. Blume, M.D., Pittsburg.

23. Paper by Carlton C. Frederick, M.D., Buffalo.

24. Some Clinical Observations, based on over One Hundred Abdominal Sections for Ovariectomy, X. O. Werder, M.D., Pittsburg.

25. Paper by L. S. McMurtry, M.D., Louisville.

26. Remarks on Methods of Hemostasis, with Demonstration, Walter B. Chase, M.D., Brooklyn.

27. Past and Present Surgery of the Gall Bladder and Bile Ducts, William H. Myers, M.D., Fort Wayne.

28. Treatment of Granular Erosion of the Cervix by Ligation of the Cervical Vessels, D. Tod Gilliam, M.D., Columbus.

29. Relation of Rectal to Pelvic Disease and to Nervous Disorders in Women, Joseph M. Mathews, M.D., Louisville.

30. Treatment of Endometritis, William A. B. Sellman, M.D., Baltimore.

31. Paper by William Warren Potter, M.D., Buffalo.

One of the sessions, or as much thereof as may be necessary, will be devoted to the presentation of pathologic specimens and their histories, with discussion pertaining to the same. It is especially requested that photographs of these specimens be *filed with the histories*, from which engravings will be made for the Transactions.

CHARLES A. L. REED, M.D., *President*.

WILLIAM WARREN POTTER, M.D., *Secretary*.

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No. 4.

ORIGINAL COMMUNICATIONS.

THE BACTERIA OF THE VAGINA AND THEIR PRACTICAL
SIGNIFICANCE, BASED UPON THE BACTERIOLOGICAL
EXAMINATION OF THE VAGINAL SECRETION OF
NINETY-TWO PREGNANT WOMEN.¹

(FOR CONCLUSIONS SEE PAGE 468.)

BY

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THE study of the bacteria found in the female generative tract previous to labor may be said to have begun in 1887, when Gönner,⁹ working with modern bacteriological methods, wrote his article "On the Micro-organisms in the Secretion of the Female Genitalia in Pregnancy and Puerperal Diseases," although pioneer work in this direction had been done by Haussmann,¹¹ Kehrer,¹³ Karewski,¹² and others with the methods which were then at their disposal.

As the result of the examination of the vaginal secretion of 32 pregnant women, Gönner⁹ stated that it did not contain the pathogenic organisms which are usually found in puerperal infection, but that the examination of cover-slip preparations revealed the presence of many organisms which usually would

¹ Read in abstract before the American Gynecological Society, May, 1898.

not grow upon the ordinary culture media. He therefore considered that autoinfection was not possible and that prophylactic antiseptic vaginal douches were not necessary.

The same year, Döderlein³ stated that lochia obtained from the uterine cavity by means of a sterilized bent glass tube were perfectly sterile, but that lochia obtained from the vagina, in at least 75 per cent of the cases, contained various species of micro-organisms, and not infrequently the pyogenic streptococci and staphylococci. He therefore concluded, in opposition to Gönner,⁹ that autoinfection was possible and that the employment of prophylactic vaginal douches was urgently indicated.

From this time on, hardly a year has elapsed without the appearance of one or more articles upon the subject, and at the present time, eleven years after the publication of the first articles of Gönner⁹ and Döderlein,³ we still find two classes of observers, whose results are absolutely contradictory.

It is our purpose in this article, in the first place, to outline briefly the work done by others and to attempt to reconcile their conflicting views in the light of our own work. We shall then consider the practical lessons which we believe should be drawn from our work, and finally give a short description of some of the bacteria which we have been able to isolate from the vaginal secretion.

In 1888 Winter²⁹ stated, as the result of his observations, that the normal uterus was always sterile, but that the cervix and vagina always contained bacteria, whether the woman was pregnant or not. From 20 cases, one-half of which were pregnant, he was able to isolate 27 varieties of bacteria, including the streptococcus and all varieties of the staphylococcus; the staphylococcus albus being found in one-half the cases and the streptococcus in 3 cases. He therefore naturally believed in autoinfection and was an earnest advocate of preliminary vaginal disinfection.

Thomen²⁴ and Samschin,²¹ on the other hand, stated that the vaginal secretion of pregnant women, while containing myriads of bacteria in cover-slip preparations, gave uniformly negative results when planted upon the usual media.

The same year (1890) Steffek²² published an extended article based upon the study of 29 cases, and concluded that the vaginal secretion frequently contained pathogenic organisms, as he found virulent staphylococci or streptococci in 41 per cent of his cases, which, when injected into animals, gave rise to abscess formation. He was accordingly a most pronounced

autoinfectionist, and devoted the latter part of his article to showing the marked improvement in morbidity which followed the use of the prophylactic douche in Würzburg.

Steffeck's²² work was also corroborated by Burguburu² and Witte.²⁸ The former examined 12 pregnant women and demonstrated staphylococci or streptococci in the vaginal secretion of 4 of them, not to speak of other non-pathogenic organisms; while Witte²⁸ examined the vaginal secretion from 53 cases, some of which were pregnant while others were suffering from various gynecological complaints, and found staphylococci in 8 cases, streptococci in 3 cases, and both organisms together in 4 other cases, and was unable to detect any other marked difference in the bacterial flora of the vagina, whether the women were pregnant or not.

Döderlein's monograph⁴ upon "Vaginal Secretion" appeared in 1892, and for a time bid fair to reconcile the conflicting statements of previous investigators. His work was based upon the examination of the vaginal secretion of 195 pregnant women, and he believed that he was able to distinguish two varieties of secretion—normal and abnormal: the normal secretion being a thick, dryish, crumbly white material with a very markedly acid reaction, which upon microscopical examination was made up of epithelial cells, large numbers of long, tolerably thick bacilli, and occasionally a few yeast cells; while the abnormal secretion was more fluid in character and purulent in appearance, less acid and occasionally neutral or alkaline in reaction, and upon microscopical examination contained many leucocytes in addition to the epithelial cells, and all varieties of bacteria, especially cocci and short bacilli. When cultures were made from the normal secretion, agar plates remained almost uniformly sterile, except for an occasional yeast colony; but when the abnormal secretion was used positive results were frequently obtained and the various pyogenic organisms frequently isolated, the streptococcus being found in 10 per cent of the abnormal cases.

Judged by these criteria, Döderlein⁴ found that 55.3 per cent of his cases presented normal and 44.6 per cent abnormal secretion.

He then stated that there was absolutely no possibility of autoinfection in the cases with normal secretion, but that it might occur when the secretion was abnormal, especially when it contained streptococci. He believed that vaginal examinations could be made with impunity in the first class of cases,

providing the examining hand was thoroughly disinfected; while they were dangerous in the second class of cases, unless the vagina was also thoroughly disinfected or the character of the secretion changed by therapeutic means. He also considered that the two varieties of secretion could readily be differentiated by their reaction and the appearance on cover-slip preparations.

As already indicated, it was hoped, when Döderlein's work first appeared, that it would serve to reconcile the conflicting views of previous observers by showing that those who obtained negative results had worked with normal secretion, while those who stated that the vagina frequently contained pathogenic bacteria had worked with abnormal secretion; but subsequent work has shown that such was not the case.

As soon as I read Döderlein's work I attempted to test its correctness, and in July, 1893,²⁷ published the result of the examination of 15 cases, which in a general way confirmed his conclusions. I found 4 cases which corresponded in every particular to his normal secretion. In the fifth case all our media were sterile, while in 2 cases we found vaginal bacilli and cocci, and in 8 other cases pus-producing organisms as follows: *Streptococcus* in 2 cases, *streptococcus* and *staphylococcus aureus* in 1 case, *staphylococcus aureus* in 1 case, *staphylococcus albus* in 3 cases, and *staphylococcus epidermidis albus* in 1 case.

In other words, we found that one-third of our cases presented normal and the other two-thirds abnormal secretion, and that 20 per cent of all our cases contained streptococci, instead of 10 per cent of the abnormal cases as in Döderlein's work.

The same year, Burckhardt¹ examined 116 cases from a more clinical standpoint, and, judging from the reaction and cover-slip examination of the secretion, found that 59.48 per cent of them had normal and 27.59 per cent abnormal secretion, while 12.93 per cent presented a secretion which could not be classed in either category. He then studied the puerperal morbidity in these cases, and found an abnormal puerperium in 23 per cent of the cases with normal and in 50 per cent of the cases with abnormal secretion.

It is thus seen that my work²⁷ and that of Burckhardt,¹ while differing in detail from Döderlein's,⁴ tended to confirm his results and to render his conclusions more positive.

It was, therefore, with considerable surprise, in the early

part of 1894, that we learned that Krönig,¹⁵ who had succeeded Döderlein at the Leipzig Frauenklinik, had arrived at diametrically opposite conclusions as the result of the examination of 100 cases. He stated "that the vaginal secretion of pregnant women who have not been examined, no matter whether normal, pathological, or highly pathological, never contains organisms which grow aerobically upon the ordinary media at the body temperature, except yeast and gonococci, and therefore never contains septic bacteria. The vagina of every pregnant woman who has not been examined is therefore aseptic." He believed that Döderlein's conception of normal and abnormal secretion was erroneous, and that the pathogenic organisms found by Döderlein,⁴ Burckhardt,¹ and myself²⁷ had been introduced into the vagina by our own manipulations. From a clinical standpoint, he also arrived at conclusions absolutely opposed to those of Burckhardt.¹ He reported 221 cases, 117 of which had normal and 104 pathological secretion (Döderlein); of the former 30.8 per cent had abnormal puerperia, while the latter had 29.8 per cent, instead of 23 per cent and 50 per cent respectively as in Burckhardt's work. Krönig^{15,18} also stated that he never found vaginal secretion with other than an acid reaction, although he admitted that the degree of acidity might vary.

It is apparent, therefore, that Krönig cast grave doubts upon the work done by Döderlein,⁴ and relegated the entire subject to the position it occupied in 1887 and 1888 when the first articles of Gönner⁹ and Döderlein³ were written.

Döderlein, as was to be expected, did not allow Krönig's work to pass unchallenged, and in several articles,^{5,6} which appeared in 1894, availed himself of what support there was in the work of Burckhardt¹ and myself,²⁷ and suggested that Krönig's¹⁵ negative cultural results must have been due to the employment of improperly prepared media, especially as he had since demonstrated the presence of streptococci in a patient's vagina upon three occasions at intervals of several months (*Centralblatt für Gynäkologie*, 1894, 780).

In the latter part of the same year Krönig¹⁸ published an article upon the "Antibacterial Action of the Vaginal Secretion of Pregnant Women," which was of extreme interest and served to substantiate still further his previous statements. Acting upon the belief that the vaginal secretion, no matter what its character, did not contain pathogenic organisms, he began a series of experiments to ascertain what effect it had

upon bacteria which were intentionally introduced into the vagina. He began with the innocuous bacillus pyocyaneus, which he introduced into the vagina of 20 pregnant women, and found that it was destroyed in every case a varying length of time after its introduction, the average being twenty hours. He found that they were destroyed most rapidly in secretions containing a pure culture of vaginal bacilli, less rapidly in those containing short bacilli, and least rapidly in those containing cocci, the average time being fourteen and one-half, sixteen, and twenty hours respectively. He then experimented with staphylococci in 16 cases, and, dividing them into the same group as above, found that the average length of time elapsing before their complete disappearance was sixteen and one-half, eleven, and fourteen hours respectively. And in three instances in which he experimented with streptococci he found that they disappeared within six hours.

He accordingly demonstrated that the vaginal secretion, no matter what its character, possessed a marked bactericidal action upon pathogenic organisms when introduced into the vagina, and believed that he was justified in stating "that we may consider the vagina of a pregnant woman as aseptic if we are sure that two or three days have elapsed since she was touched." In the latter part of his article he also demonstrated that douches with various antiseptic substances, instead of destroying pathogenic organisms which had been introduced into the vagina, served only to weaken or destroy the normal antiseptic qualities of the secretion.

Döderlein, in his monograph,⁴ mentioned one instance in which a pure culture of staphylococcus aureus had completely disappeared twenty-four hours after its introduction into a vagina with normal secretion, and stated that Bumm had made the same observation in two cases. This action he was inclined to attribute to the acidity of the secretion, which he considered was produced by the vaginal bacilli themselves. Krönig,¹⁶ however, did not consider this the sole factor, and, while not making positive assertions, was inclined to believe that the bactericidal action was probably due to a combination of several factors, among which may be mentioned: (1) chemical substances in the secretion, perhaps the acid; (2) the antagonism between the vaginal and imported bacteria; (3) phagocytic action; (4) the lack of oxygen.

Krönig's work was confirmed by Menge,¹⁹ who, working upon the vaginal secretion of fifty non-pregnant women, was

able to demonstrate that it likewise possessed a bactericidal action, although not to so marked a degree as in pregnant women. It is interesting to note that it was present even when the secretion presented a neutral or alkaline reaction. It is also interesting to learn that he found that agar plates made from secretion from the upper part of the vagina were sterile in 44 out of the 50 cases, and that in one instance he isolated a typical streptococcus.

The importance of Krönig's^{15,16} conclusions, if fully sustained, was far-reaching, as they would inevitably necessitate the abandonment of the doctrine of autoinfection and lead to the disuse of the vaginal douche before, during, and immediately after labor.

Döderlein⁷ attempted to meet Krönig's arguments in an article published in March, 1895, in which he stated that the latter's experiments upon the bactericidal action of vaginal secretion upon streptococci were inconclusive, as they were based upon only three cases, in two of which the secretion was normal, in which their destruction could be confidently counted upon, while in only one case was the secretion abnormal, and one was not justified in concluding from a single case that all abnormal secretions would act in the same manner, especially as he had shown that suitable conditions for the growth of streptococci were present in only one-tenth of the cases with abnormal secretion.

It is apparent, however, that Döderlein⁷ was more or less impressed with Krönig's^{15,16} work, as he advocated restricting the use of antiseptic douches to operative cases, instead of using the prophylactic douche in every case in which the secretion was abnormal, as he had previously recommended.

Unfortunately the work which appeared in the next few years was almost diametrically opposed to that of Krönig¹⁶ and Menge.¹⁹

Walthard²⁰ in 1895 published the results of the examination of 100 cases, and startled those who had read Krönig's work by stating that he found streptococci in 27 per cent of his cases. He stated that agar plates in the vast majority of his cases were either sterile or showed a very slight growth, and it was not until he inoculated bouillon, or, better still, bouillon containing one per cent of glucose, that frequent positive results were obtained. None of the streptococci so cultivated were pathogenic when introduced into animals, but gave positive results when injected into tissues whose vitality

had been lowered by cutting off their blood supply for a longer or shorter period. He also frequently found staphylococci and colon bacilli, and occasionally various other organisms. He also stated that the lower part of the cervical canal contained all the bacteria which are found in the vagina, while its upper portions were uniformly sterile. This he attributed to the mucous plug, which fills the canal, being a very poor medium for their growth. In this regard he confirmed the work of Stroganoff,²³ Menge,²⁰ Göbel,^{*} and contradicted the statements of Winter.^{29,30} As he believed that the vaginal streptococci possessed only a slight degree of virulence or none at all, he did not consider that their destruction by antiseptic douches was indicated, unless the hand or instruments were to be introduced past the upper part of the cervical canal and into the uterine cavity.

Vahle²⁵ in 1896 reported the work which he had done in Ahlfeld's clinic in Marburg. He obtained the secretion from 30 pregnant women by means of a speculum, and, leaving other organisms out of account, stated that he found streptococci in 10 per cent and staphylococci in 33 per cent of all his cases. He then examined 60 women in labor with his "sterile" finger, and after withdrawing it made cultures from it, when he found streptococci in 25 per cent and staphylococci in 75 per cent of all cases. The technique in his second series of cases is so faulty that the results obtained by it are not entitled to consideration.

Last year Krönig and Menge's¹⁸ work upon the "Bacteriology of the Female Genital Canal" appeared, and in it Krönig made a further contribution to the subject by adding 67 to the 100 cases which he had already reported. With the exception of yeast, which grew in a certain number of cases, agar plates from 167 cases were absolutely sterile in 152 cases, or 92.8 per cent, leaving 15 cases in which there was a growth. Twelve of these he has apparently good reason to exclude as being contaminated, leaving 3 positive cases, from 2 of which he isolated a non-pathogenic coccus which he did not identify, while in the third he isolated a streptococcus, which, however, he did not consider identical with the streptococcus pyogenes, as it was not pathogenic and differed from the pyogenes in that it grew luxuriantly upon acid agar and rapidly produced a profuse cloudiness in bouillon. He therefore concluded that further work enabled him to reaffirm his previous statements as to the absence of pyogenic bacteria from the vaginal secretion.

In addition to the 167 cases from which he made cultures, he

tested the reaction and examined cover slips from 118 other cases, making 285 in all, 56.8 per cent of which presented a reaction containing fair-sized bacilli, while 43.2 per cent contained short bacilli or cocci—which corresponds very closely to Döderlein's 55.4 per cent of normal and 44.6 per cent of abnormal secretion. While thus confirming Döderlein's classification, he believes that the distinction is unnecessary, as neither variety of secretion contains pathogenic bacteria, and therefore it is a matter of indifference which variety is present.

The latest contribution to the discussion has been made by Kottmann,¹⁴ of Berne, who reports the examination of 54 cases, from which he obtained the secretion by means of a complicated apparatus, of which I shall speak later. He found streptococci in 7 cases (13 per cent), staphylococci in 37, and colon bacilli in 6 cases, not to mention numerous other bacteria, which he isolated and fully and carefully described.

From this survey of the literature, it is apparent that the subject is not yet definitely settled, Gönner,⁹ Thomen,²⁴ Samschin,²¹ Krönig,^{15, 18} and Menge being the only observers who have not found streptococci as well as other pathogenic bacteria, while all other investigators found them in a varying percentage of their cases, as shown by the following table: Burckhardt,¹ 4 per cent; Steffek,²² 4; Döderlein,⁴ 4.1; Burguburu,² 8.5; Vahle,²⁵ 10; Witte,²⁸ 12.5; Kottmann,¹⁴ 13; Winter,²⁹ 15; Williams,²⁷ 20; Vahle²⁶ (finger), 25; Walthard,²⁶ 27.

In view of this marked discrepancy in the results of the various observers, and especially as Krönig insisted, when I was last in Leipzig, that my previous positive results were due to faulty technique, I determined to repeat the work upon a larger series of cases, following his methods as closely as possible, and I am now able to report the results of the examination of 92 cases.

Krönig^{15, 18} pointed out that all the investigators up to his time had obtained the secretion by means of a speculum introduced through the vulva, and stated that he believed that a large part of the positive results were due to bacteria being carried from the vulva into the vagina by means of the speculum, which he believed could not be introduced without coming in contact with the margins of the hymen, and also that it was practically impossible to obtain secretion from any part of the vaginal wall which had not come in contact with the end of the speculum. He therefore obtained the secretion from his cases by means of a sterilized glass tube, which was

small enough to be introduced through the hymen without coming in contact with its margin, and then, by attaching a well-drawing syringe to its free end, was able to aspirate into it enough secretion for examination.

I attempted to use a similar tube, but, unless the secretion was abnormally fluid, found great difficulty in obtaining enough of it for examination, and after a few attempts I discontinued its use. I then made use of the apparatus which Menge¹⁹ devised for obtaining vaginal secretion from non-pregnant women, and found it most efficient. It consists of a metal tube about 25 centimetres long and 5 millimetres in diameter, one end being closed and the other open. A few millimetres from the closed end there is a quadrilateral fenestrum, about 2 centimetres long, which involves about one-half of the circumference of the tube. Within this tube is another, which fits it quite closely and is provided at its upper end with a handle, while its lower end, corresponding to the fenestrum of the outer tube, but on the opposite side, has a segment cut out of it which involves a little less than half its circumference. By means of longitudinal slots at the upper end of each tube, through which a screw passes, they are held together in such a way as to permit the inner tube being moved up and down within the outer one without turning. When the inner tube is pushed down by means of its handle, its lower end accurately closes the fenestrum of the outer tube, but when it is drawn up the fenestrum is opened.

The closed tube is carefully wrapped in a piece of thick muslin and put for one hour into a steam sterilizer, and then allowed to dry, when it can be carried from place to place without fear of contamination. When it is desired to obtain secretion for examination, the vulva is carefully washed and the patient placed upon the examining table, and the hymen is spread so widely apart with two fingers that the tube can be introduced without coming in contact with its margins. The tube is then removed from its cover and introduced to the upper end of the vagina, the fenestrum opened, and by a scraping motion more or less secretion is collected. The fenestrum is then closed and the tube carefully withdrawn, care being taken to prevent its coming in contact with the margins of the hymen. It is then replaced in its sterilized cover and taken to the laboratory for examination. By this method we were able in every case to obtain an abundance of secretion,

with the positive conviction that it had not been contaminated by organisms from the vulva.

After opening the tube, the general appearance of the secretion was noted, its reaction determined, and cover-slip preparations made from it. It was then inoculated upon the following media: 3 agar plates, 2 plates each of acid and glucose agar, 1 human blood serum slant or a urine and blood serum slant for gonococci, and finally anaerobic glucose-agar cultures were made by inoculating melted glucose-agar tubes, allowing them to cool, and then pouring upon them the contents of a second tube which had not been inoculated; while in a certain number of cases we used Buchner's jars or Novy's apparatus. The agar and blood serum tubes were made in the usual way, the glucose-agar by adding 1 per cent of glucose to ordinary agar, and the acid agar by using chopped-up placenta instead of ordinary beef extract in preparing the agar, and not neutralizing its acidity. The tubes and plates remained in the thermostat for forty-eight hours before examination, and, if still sterile, were allowed to remain another twenty-four hours before being discarded.

Results.—We found 30 cases (32.6 per cent) in which the secretion, in its appearance, reaction, and cover-slip examinations, corresponded to Döderlein's normal secretion and contained nothing but vaginal bacilli and yeast in cultures, while in 62 cases it was abnormal when judged by Döderlein's criteria. In 4 cases, which we designated as abnormal from their appearance, we found only vaginal bacilli and yeast; while in several other cases, which presented a perfectly normal appearance, we found that the characteristic vaginal bacilli had given place to other bacteria.

In view of these exceptional cases, it is evident that Döderlein's distinction between normal and abnormal secretions does not necessarily give a correct index to their bacterial contents; but we believe, nevertheless, that a markedly acid, thick white secretion in the vast majority of cases will contain nothing but vaginal bacilli and occasionally a few yeast cells.

We found that the secretion frequently presented marked variations in its reaction, rendering it necessary to distinguish between markedly, tolerably, and faintly acid reaction. In addition to the varying degrees of acidity, we observed a neutral or slightly alkaline reaction in six cases, three of each, and thereby confirm Döderlein's original statements, which were

denied by Krönig.^{15,16} It should be added, however, that in nearly every case we believe the neutral or alkaline reaction was not primary but was due to accidental causes. Thus, in several instances the vaginal mucosa was nipped in closing the fenestrum of the tube, causing the secretion to be mixed with blood; while in several other cases it became mixed with alkaline cervical secretion, in women who were in labor at the time the secretion was obtained, but who did not mention it until afterward.

Turning to our bacteriological investigations, we found the agar plates absolutely sterile in 54 cases (59 per cent), with the exception of yeast colonies in a certain number of cases; while in 38 cases various bacteria grew upon them. From 6 of these 38 cases we were able to isolate aerobic cocci in pure culture; but only 2 of them could be identified as pus organisms, which in each case proved to be the staphylococci epidermidis albus. The cocci in the other 4 cases were not identified and were not pathogenic; 1 of them grew upon all media, slowly liquefied gelatin and coagulated milk, and on agar plates formed small, yellowish, round and whetstone-shaped colonies, just beneath the surface, which under the microscope were yellowish and granular, and presented a stellate appearance not unlike uric acid crystals. In the other 3 instances the cocci did not liquefy gelatin, and in 1 case did not coagulate milk.

Upon none of the aerobic agar plates did we see colonies which were in the slightest degree suggestive of streptococci.

We are not inclined to throw these cocci out of consideration as contaminations and then assert that aerobic cocci do not occur in the vaginal secretion, for the reason that cocci were seen in the original cover slips in each case, and the inference is that they are identified with those isolated in the cultures.

Admitting that they were in the secretion as removed from the vagina, the question arises, were they originally there or were they introduced by our manipulations? A positive answer cannot be given. but, in view of the ease with which the secretion was obtained for examination, it would appear that the first supposition is more likely the correct one. In 4 cases we were able to isolate what we considered to be gonococci; at least they were cocci and diplococci, which decolorized with Gram's stain and grew only upon human blood serum or urine-agar slants.

While speaking of cocci, it may be well to refer in this place

to certain organisms which we found in anaerobic cultures, leaving the other organisms which were so cultivated for later consideration. In 3 cases we found cocci in pure culture in anaerobic media, while the aerobic plates were sterile. In 1 of these cases we found upon agar slants, which had been placed in Buchner jars, small white colonies, which upon microscopic examination consisted of cocci in short chains. They grew slightly at the bottom of bouillon tubes, but refused to grow upon any of the usual aerobic media. Repeated experiments upon mice and rabbits showed that they were not pathogenic. We are inclined to consider them as strictly anaerobic streptococci, more or less like those which Krönig¹⁷ has described. In the other 2 cases we found small, round, white colonies in the depths of the anaerobic glucose-agar tubes, which consisted of cocci in pure cultures which we were unable to cultivate beyond the original tubes, either ana- or aerobically, while in 3 other cases we found cocci mixed with various kinds of bacilli in the anaerobic glucose-agar tubes, but were unable to isolate them, as neither the cocci nor bacilli could be grown beyond the original tubes.

To recapitulate, we found cocci in 12 cases (excepting the gonococci), 6 of which grew upon agar plates, while the rest grew only anaerobically; and of the 12 there are only 3 which can possibly be considered as pyogenic—namely. the staphylococcus epidermidis albus in 2 cases and a strictly anaerobic streptococcus. When we remember, however, that the staphylococcus epidermidis albus is not found in puerperal infection, and that the streptococcus, which is usually found in severe cases, grows readily upon the ordinary culture media, I think that we are fully justified in concluding that we have found nothing in our series of cases to indicate that the vaginal secretion, whether normal or abnormal according to Döderlein, contains pyogenic cocci which can give rise to puerperal fever.

This statement is in strict accord with Krönig's^{15, 18} conclusions and directly contradictory to my own work in 1893²⁷; and the only explanation which I can offer for the marked difference between my results then and now is the difference in the technique employed in obtaining the secretion for examination.

In 1893²⁷ I used a sterilized cylindrical glass speculum about two centimetres in diameter, and attempted to obtain the secretion from portions of the vaginal wall which had not come in

contact with it, and found pyogenic cocci in 53 per cent of my cases, including 20 per cent of streptococci; while in the present series of cases, obtaining my secretion by means of Menge's tube, I found pyogenic organisms (*staphylococcus epidermidis albus*) in only 2 per cent of the cases, and not a single streptococcus.

As the culture media were prepared in the same manner in each series of cases, it cannot be suggested that the differing results were due to defects in their preparation, and the only explanation which suggests itself is that in the first series of cases bacteria, which were upon the labia minora and the margins of the hymen, were carried into the vagina by the introduction of the speculum and were then demonstrated in the cultures, while in the present series that possibility was avoided.

As the result of my own work I am compelled to agree with Krönig that the positive results of other investigators are due to faulty technique, and that in all probability they themselves introduced into the vagina the cocci which they demonstrated in their cultures.

If we inquire as to the method employed by the various investigators who obtained positive results, we find that Steffek²² and Winter²⁹ used Simon's speculum; Döderlein,^{3,4} Witte,²⁸ Burguburu,² myself²⁷ (1893), Burckhardt,¹ Walthard,²⁶ and Vahle²⁵ used glass or porcelain cylindrical specula; while Kottmann¹⁴ employed a complicated apparatus, consisting of two glass tubes, one within the other. The inner tube is 11 millimetres in diameter, is closed at one end, and near its extremity a depression is blown in such a way as to produce a marked bulging into its lumen with very thin walls, which can readily be broken by pushing a heavy wire past it. This tube is then placed in a larger, shorter one open at both ends, within which it closely fits, and which serves to protect it from contact with the vaginal walls. The two tubes are introduced a certain distance into the vagina, when the tip of the inner tube is pushed beyond the protecting tube, and an opening made in it by breaking through its thin portion with a wire, when secretion is collected by it as with Menge's tube. It is apparent that this apparatus, which is ingenious in its construction, is hardly superior to the cylindrical speculum; for while the measurements of the outer tube are not given, it must be at least 16 millimetres in diameter, and consequently must come in contact with the margins of the hymen when introduced into the vagina,

and probably pushes in front of it a large part of the organisms which are found later in the cultures.

The validity of these objections is borne out by the results, as Kottmann¹⁴ found staphylococci in 70 per cent, streptococci in 13 per cent, and colon bacilli in 11 per cent of his cases.

Krönig^{15, 18} and I, on the other hand, used small tubes, not exceeding 5 millimetres in diameter, and obtained negative results; and from the evidence adduced it would appear probable that the discrepancy in the results of the various investigators is due to the methods by which they obtained the secretion for examination rather than to serious defects in their bacteriological technique.

While we are able to confirm Krönig's statements as to the absence of pyogenic cocci from the vaginal secretion of pregnant women, we cannot agree with him that the agar plates are uniformly sterile; for, as we have already indicated, we observed colonies, other than yeast, upon them in 38 cases, which in 6 instances consisted of cocci which we have already considered, leaving 32 cases in which other bacteria were observed. These, however, we shall not consider in detail, but shall refer those who are interested in their description to the appendix and table at the close of the article.

The vaginal bacillus, the long bacillus which Döderlein first described as characteristic of normal secretion, grows best in anaerobic media, and especially in anaerobic glucose-agar; but in a certain proportion of cases it also grows aerobically upon acid and glucose agar, and occasionally upon plain agar. In our series of cases we were able to cultivate the vaginal bacillus in anaerobic glucose-agar or upon acid agar plates in 28 cases; and in 16 other cases we were able to cultivate upon plain agar and other media a bacillus which corresponded in every particular to the vaginal bacillus, except in the ease with which it grew aerobically; and in 2 other cases we found a similar bacillus which could not be cultivated beyond the original agar plate. We are inclined to consider these bacilli as closely related to or identical with the vaginal bacillus, especially as Döderlein⁴ stated in his monograph that they would grow upon agar in a certain number of cases. But whatever their relation to the vaginal bacillus may be, we cannot regard them as contaminations, for in many cases bacilli of identical appearance were the only variety of bacteria observed in the original cover slips, and also grew in the anaerobic glucose-agar tubes. The aerobic bacillus was observed in 16 cases,

or in one-half the cases in which bacillary colonies were noted upon plain agar.

In 11 other cases short, thick bacilli grew upon the agar plates, and, as may be seen from the descriptions in the appendix, are of several varieties. None of them are pathogenic, and it is hardly probable that they are of any great importance, at least as far as the causation of disease is concerned.

We next come to a series of aerobic bacilli which may be of greater importance, as they produce gas in glucose-agar, and in one case (Case 7) were markedly pathogenic for mice and rabbits. These bacilli were observed in 3 cases. One of them (Case 10) undoubtedly belongs to the colon bacillus group, but differs somewhat from the typical colon bacillus, while the other two (7 and 81) were not identified.

In addition to their ability to produce gas in media containing glucose, and their pathogenicity in one case, the bacilli in question possess a marked interest in view of the work of Gönner,¹⁰ who has recently published an article upon the presence of putrefactive organisms in the vaginal secretion. As the result of his investigations, some of which were made with an ingenious apparatus which afforded ideal conditions for the growth of anaerobic bacteria, he concluded that the vaginal secretion did not contain aerobic or anaerobic bacteria which could lead to putrescence of the amniotic fluid and the production of gas.

Unfortunately our gas-producing bacilli were not tested as to their behavior in amniotic fluid, and therefore cannot serve to confirm or refute his conclusions. But until it is proved that they cannot cause putrefaction of the amniotic fluid, or that they are contaminations, neither of which we are able to do, Gönner's results will be open to more or less doubt until their correctness has been demonstrated in a larger series of cases.

In addition to the aerobic organisms already mentioned, we were able to cultivate a bacillus corresponding to the bacillus enteritidis of Gärtner and the bacillus subtilis, each in one case. In both of these cases, bacilli were seen in the original cover-slip preparations whose appearance corresponded in all particulars with the organisms obtained in cultures, so that they cannot be discarded as contaminations. And, finally, we may add that yeast plants were found upon the agar plates in 26 cases, being almost equally divided between the normal and abnormal secretions.

Turning to the consideration of the bacteria which were demonstrated by anaerobic methods, we find that they were observed in 15 cases, not including the 6 cases of anaerobic cocci and the numerous instances in which the vaginal bacillus grew strictly anaerobically.

The bacteria in the 15 cases under consideration were all bacilli, which differed so considerably among themselves that they may be considered in five groups, as follows: (a) 6 cases in which we found short, thick, strictly anaerobic bacilli; (b) 4 cases in which the bacilli also grew upon acid, but not upon the usual alkaline media; (c) 2 cases in which the bacilli grew only in the anaerobic glucose-agar tubes in the primary cultures, and afterward upon the usual media; (d) 1 case of a strictly anaerobic gas-producing organism; (e) 2 cases in which we found strictly anaerobic, long, tolerably thick bacilli which were three to four or five times as long as broad. We tested the pathogenicity of these organisms as far as possible, but failed to find any that were fatal to laboratory animals.

The organisms which we have been able to isolate constitute only a small portion of the bacteria which are found in the vaginal secretion; for it is not unusual to note three or four varieties of bacteria, cocci as well as bacilli, in the cover slips from the secretions, and to find that our culture media are either absolutely sterile or possibly present colonies of one or two species of bacteria. It is therefore apparent that our knowledge of the vaginal bacteria is limited and will remain so until methods are devised by which we can isolate and study the action of the various bacteria, which at present we can see but cannot cultivate.

Having thus studied the vaginal bacteria as closely as possible, it is interesting to ascertain what effect, if any, they exert upon the puerperium.

All the women upon whose vaginal secretion this paper is based were afterward delivered in the Lying-in Ward of the Johns Hopkins Hospital. In normal cases the temperature of every patient is taken four times a day during the puerperium, and every two hours if it reaches 100° F. (37.7° C.), so that every rise of temperature is promptly noted. The temperature rose to or above 100.4° F. (38° C.) in 29 cases, or 31.5 per cent, as shown by the following table, which also shows the character of the secretion before labor and the height to which the temperature rose:

	Normal secretion.	Abnormal secretion.	Total.
9 cases from 100.4° to 100.9°	4	5	9
12 cases from 101° to 101.9°	2	10	12
6 cases from 102° to 102.9° .....	..	6	6
1 case from 103° to 103.9°	1	..	1
1 case from 104° .....	..	1	1
29	7	22	29

When we remember that 30 of our cases presented normal and 62 abnormal secretion, we find that 23 per cent of the former and 35 per cent of the latter had febrile puerperia, which, in other words, were about one-third more frequent in the latter class of cases.

From so small a number of cases, however, we cannot draw reliable conclusions, and we must therefore attempt in some other way, if possible, to ascertain the influence which the various vaginal bacteria exert upon the puerperium.

In 9 of the 29 cases, the temperature rose either during or just after labor, and fell to normal with the next twelve or eighteen hours, never to rise again. These we have designated as primary or initial rises, and believe that they must be attributed to other causes than infection. In the other 20 cases, however, the rise in temperature usually occurred on the third to the fifth day of the puerperium, and in some of the cases, at least, was due to infection. In several of the cases caked breasts or cracked nipples offered a sufficient explanation for a transient rise of temperature, and in several other cases there was a single rise of temperature, which would have passed unnoticed had the temperature not been noted every two hours.

In 20 cases of the entire number, rises of temperature to 101 or higher were noted, and from 13 of them the uterine lochia were removed by Döderlein's tube and subjected to bacteriological examination—the same media being employed as in the examination of the vaginal secretion—and the blood examined for malarial plasmodia. In the 7 other cases cultures were not made, as the rise of temperature was either primary or clearly due to irritation about the breasts, or so transient that it had fallen before preparations could be made for taking the cultures.

In 9 of these 13 cases the uterine lochia were perfectly sterile,

while in the remaining 4 cases the presence of bacteria was demonstrated.

From the following table, however, it is seen that the bacteria found in the uterine lochia differed markedly from those cultivated from the vaginal secretion. In Cases 20 and 44 they differed in every particular, while in the other 2 cases they presented the same appearance but grew differently in cultures. It would appear, therefore, in spite of the fact that there were one-third more rises of temperature in the cases presenting abnormal secretion, that the difference was due to accidental causes and not to the bacteria of the vaginal secretion, and that none of the rises of temperature were due to autoinfection.

Case.	Highest temperature.	Vaginal secretion culture.	Uterine lochia.
8	102.6° (39.2° C.)	Short, oval bacilli of varying lengths, capsulated Stain with Gram. Non-pathogenic. Grow anaerobically on acid and sugar media, only anaerobically on plain agar.	Short bacilli of varying lengths. Stain with Gram. Non pathogenic. Grow on all media.
20	101.4° (38.6° C.)	Negative.....	Short, thick anaerobic bacilli. Cannot be grown beyond original tube
44	102.6° (39.2° C.)	Staphylococci epidermidis albus.	Colon bacilli (Eclampsia; accouchement forcé.)
76	102.5° (39.2° C.)	Tolerably thick anaerobic bacilli, 1-2-3. 2. Anaerobic cocci.	Cultures sterile. Cover glass; tolerably thick bacilli; no cocci.

As the result of our work, we would say that the vaginal secretion does not contain pyogenic cocci, and therefore cannot afford the slightest support for the doctrine of autoinfection as far as they are concerned; and we were unable to find any evidence of autoinfection from other bacteria in any of our puerperal cases. But the finding of a pathogenic gas-producing bacillus in the vaginal secretion of a pregnant woman, who had not been examined, would appear to indicate that in rare instances it may be possible for some of the various bacilli which are found in the vagina to give rise to an infection without the aid of external agencies. Such infections did not occur in our cases, and possibly may never occur; but until we shall have devised means for isolating and studying the various organisms which we can see in cover-slip preparations, but cannot cultivate, we

shall not be able to deny positively the possibility of autoinfection from such sources; but at the same time we can absolutely deny the presence of pyogenic cocci in the vaginal secretion of pregnant women, and assert positively that none of the usual forms of puerperal infection can be due to autoinfection. Such being the case, the prophylactic vaginal douche should be discarded as useless, and probably as injurious, as has been shown by Krönig from the experimental, and by Leopold and Hermann from the clinical, point of view.

Conclusions.—1. We agree with Krönig that the vaginal secretion of pregnant women does not contain the usual pyogenic cocci, having found the staphylococcus epidermidis albus only twice in 92 cases, but never the streptococcus pyogenes or the staphylococcus aureus or albus.

2. The discrepancy in the results of the various investigators is due to the technique by which the secretion is obtained.

3. As the vagina does not contain pyogenic cocci, autoinfection with them is impossible; and when they are found in the puerperal uterus, they have been introduced from without.

4. The gonococcus is occasionally found in the vaginal secretion, and during the puerperium may extend from the cervix into the uterus and tubes.

5. It is possible, but not yet demonstrated, in very rare instances, that the vagina may contain bacteria, which may give rise to sapremia and putrefactive endometritis by autoinfection.

6. Death from puerperal infection is always due to infection from without, and is usually due to neglect of aseptic precautions on the part of the physician and nurse.

7. Puerperal infection is to be avoided by limiting vaginal examinations as much as possible and cultivating external palpation. When vaginal examinations are to be made, the external genitalia should be carefully cleansed and disinfected, and the hands rendered as aseptic as if for a laparotomy. Vaginal douches are not necessary and are probably harmful.

APPENDIX.

I.—*BACILLUS VAGINALIS* (*Döderlein*) (28 cases).

Morphology:

Tolerably thick bacilli, from three to five times as long as broad, often arranged in short chains. Non-motile. Stain with Gram.

Behavior upon culture media:

Agar plates and slants almost uniformly sterile.

Acid and glucose agar plates—usually sterile, but in a small proportion of cases a few very small, clear, almost transparent, superficial colonies may be seen.

Anaerobic glucose-agar—many small, round, white colonies. No gas formation.

Potato—no growth.

Milk—slight growth, slightly acidified.

Bouillon—very slight growth in depths.

Bouillon with one per cent glucose—profuse growth, often forming long chains, in some of which the divisions between the individual bacilli are no longer seen.

Gelatin stab—sterile.

Pathogenicity—absent.

II.—BACILLI LIKE *BACILLUS VAGINALIS*, GROWING UPON AGAR (16 cases).

Morphology:

Long, tolerably thick bacilli, from three to five times as long as broad, often arranged in short chains. Non-motile. Stain with Gram.

Agar plates—small, round, pale, superficial colonies with serrated margins. Under the microscope they have a darkly granular centre with a profusely arborescent periphery.

Acid and glucose agar plates like agar.

Agar slant—very small, round, almost transparent colonies.

Anaerobic glucose-agar—very small, round, white colonies. No gas.

Potato—very slight, invisible growth.

Milk—no growth as a rule.

Bouillon—slight sediment at bottom of tube. Bacilli in long chains.

Gelatin stab—no growth.

Pathogenicity—absent.

III.—SHORT, THICK BACILLI GROWING UPON PRIMARY AGAR PLATES.

(a) Cases 2, 5, 66—*Short, thick bacilli.*

Morphology:

Of varying length, rounded ends, from almost coccus

forms to bacilli, three times as long as broad, often in pairs and chains, in some of which bacilli of varying length are seen adjoining one another. Non-motile. Stain with Gram.

Behavior upon culture media:

Agar plates—small, round, whitish, punctate colonies, which are dark and finely granular under the microscope.

Acid and glucose agar plates—ditto.

Agar slant—fine growth made up of punctate colonies.

Glucose-agar slants—no gas.

Litmus milk—acidified, not coagulated.

Potato—invisible growth on potato.

Bouillon—marked cloudiness.

Gelatin stab—slight growth, no liquefaction.

Pathogenicity—absent.

(b) Case 21—Bacilli identical with above, except that they form a moist white growth on potato.

(c) Cases 64 and 70—Bacilli identical with (a), except that they coagulate milk.

(d) Cases 23, 43, 53, 77, 82—Grow on primary media just as (a), but cannot be cultivated beyond them.

IV.—AEROBIC GAS-PRODUCING BACILLI (3 cases).

(a) Case 7—*Pathogenic gas-producing bacillus*.

Morphology:

Short, thick bacilli with rounded ends, about twice as long as broad. Stain with Gram. Non-motile. Show a slight capsule when taken from animals, but none when taken from cultures.

Behavior in culture media:

In agar plates they form large, round, white colonies, which are dark and granular under the microscope.

In agar slants, a profuse, opalescent, white growth.

In anaerobic glucose-agar, marked gas production within twenty-four hours.

Potato—slight glazed growth.

Litmus milk—acidified but not coagulated at the end of one week.

Bouillon—marked cloudiness.

Gelatin stab—slight white growth, but no liquefaction at the end of three weeks.

Pathogenicity—three-tenths of a cubic centimetre of twenty-four hour bouillon culture kills mice in twenty hours. One cubic centimetre of same kills rabbits in eighteen hours. When 4 cubic centimetres of same are injected into the ear vein of a rabbit, and the animal is killed and placed in the thermostat for four hours, there is slight gas production in the blood vessels and liver, but not nearly so marked as when the bacillus aerogenes capsulatus is used.

(b) Case 10—*Non-pathogenic bacillus belonging to the colon group.*

Morphology:

Short, thick bacilli with rounded ends, about twice as long as broad. Decolorize with Gram; motile; non-capsulated.

Behavior in culture media:

Agar plates—superficial, round, whitish, opalescent colonies with serrated edges.

Agar slants—profuse opalescent white growth.

Anaerobic glucose-agar—marked gas production within twenty-four hours.

Potato—slight colorless growth.

Bouillon—cloudy in twenty-four hours.

Litmus milk—acidified but not coagulated in seven days.

Gelatin stab—slight growth but no liquefaction at the end of two weeks.

Pathogenicity—1 and 2 cubic centimetres of twenty-four hour bouillon culture have no effect upon rabbits.

(c) Case 81—*Non-pathogenic gas-producing bacillus.*

Morphology:

Tolerably thick bacilli with rounded ends, which vary in length from almost coccus forms to bacilli, four times as long as broad. Frequently arranged in chains, whose members vary greatly in length. Non-motile. Stain with Gram.

Behavior in culture media:

Agar plates—a few round and whetstone-shaped, yellowish white, deep colonies, one-half to 1 millimetre in diameter. Dark and coarsely granular under the microscope.

Agar slant—profuse, slightly translucent growth, made up of pale round colonies with serrated edges.

Similar growth upon acid and glucose agar slants.

Anaerobic glucose-agar—marked gas production within twenty-four hours.

Litmus milk—coagulated in six to seven days.

Potato—invisible growth.

Gelatin stab—not liquefied.

Pathogenicity—absent for mice and rabbits.

V.—ANAEROBIC BACTERIA. *Short, thick, strictly anaerobic bacilli* (Nos. 31, 49, 57, 58, 63, 76).

Morphology:

Short, thick bacilli with rounded ends, varying from almost coccus forms to bacilli, three times as long as broad. Frequently arranged in pairs and short chains, in which the individual bacilli may be of varying size.

Stain with Gram. Non-motile.

Behavior upon culture media:

All aerobic media sterile.

In anaerobic glucose-agar they form small, round, white colonies, which cannot be cultivated beyond the original tube.

Pathogenicity—not tested.

VI.—*Short, thick, anaerobic bacilli, which also grow aerobically upon acid media* (Nos. 8, 9, 13, 18).

Morphology:

Short, thick bacilli with rounded ends, varying in length from almost coccus forms to bacilli, three times as long as broad; often arranged in short chains. Stain with Gram. Non-motile. Occasionally traces of a capsule may be observed.

Behavior in culture media:

Agar plates and slants—uniformly sterile.

Acid agar plates and slants—a few fine, punctiform, pale, round colonies.

Glucose-agar plates—no surface growth.

Anaerobic glucose-agar—many small, round and oval white colonies, which are dark and finely granular under the microscope. No gas formation.

Milk—no growth.

Potato—occasionally an invisible growth.

Gelatin—no growth.

Bouillon—slight cloudiness at the bottom of the tube; cover slip shows chains composed of very short bacilli, almost like cocci.

Pathogenicity—none.

VII.—*Short, thick bacilli growing anaerobically in primary cultures, afterward in all media* (Nos. 71 and 76).

Morphology:

Short, thick bacilli with rounded ends, resembling colon bacilli, two or three times as long as broad. Stain with Gram. Motile.

Behavior upon culture media:

All primary cultures sterile, except anaerobic glucose-agar, in which there are many small, round, white colonies. No gas formation. In secondary agar, acid and glucose agar, small, round, semi-transparent colonies, very light, and slightly granular under the microscope.

Litmus milk—not coagulated.

Potato—invisible growth.

Bouillon—slight cloudiness.

Gelatin—slight growth, no liquefaction.

Pathogenicity—absent.

VIII.—*Strictly anaerobic gas-producing bacilli* (No. 27).

Morphology:

Short, thick bacilli, two or three times as long as broad, often in pairs. Grow only in primary anaerobic glucose-agar tubes, with marked gas production. Were mixed with staphylococcus epidermidis albus, but died out before they could be obtained in pure culture.

IX.—*Strictly anaerobic bacilli of varying length.*

Morphology:

Thick bacilli, of varying length, from two to five times as long as broad. Non-motile. Stain with Gram.

Behavior upon culture media:

Grow only upon anaerobic glucose-agar, as small, round, pale colonies about 1 millimetre in diameter. Under the microscope they consist of a dark, granular nucleus and an arborescent periphery. After several days' growth, the colonies become larger and present a distinctly fuzzy appearance. Cannot be cultivated in any other media.

Pathogenicity—not known.

No.	Date.	Name.	Character- istics.	Reaction.	Cover glass.	Cultures.	Puer- per- ium.	Remarks.	Döder- lein.
1	December 26, 1896.	Ruziska....	Starch-like..	Very acid..	Epithelium, no leucocytes; tolerably thick bacilli, 1-4-5, often in chains.	Agar plates; sterile.....	99.5°	.....	+
2	January 5, 1897.	Fladung ..	Yellowish- green thick fluid.	Neutral....	Many leucocytes; short, thick bacilli, from almost coccus forms to 1-3;	1. Short, aerobic bacilli, from almost coccus forms to 1-3. 2. Yeast.	99°	.....	(
3	January 6, 1897.	Munnimus.	Yellowish- white; semi-fluid; few gas bubbles.	Acid.....	Much epithelium, few leucocytes. 1. Short, thick bacilli, 1-1½-2, usu- ally in pairs.	Sterile.....	100.3°	Flat rachitic pel- vis. Difficult forceps. No cultures.	-
4	January 15, 1897.	Ruth Smith.	Thick, starch-like.	"	Much epithelium, no leucocytes. 1. Fairly thick bacilli, 1-3-4-5, in chains. 2. Yeast.	1. Yeast. 2. Few bacilli in anaerobic glucose-agar.	100°	.....	+
5	January 16, 1897.	Edith Har- ris.	Thick, whitish.	"	Much epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-2-4. 2. Isolated cocci. (?)	1. Short, thick bacilli, sometimes as short as cocci, often in chains; non- motile, non-pathogenic; grows on all media but gelatin and milk.	102.6°	Uterine culture sterile.	-
6	January 26, 1897.	Spillman...	Thick, starch-like.	Very acid..	Much epithelium, no leucocytes. 1. Fairly thick bacilli, 1-4-5, often in chains. 2. Few short, thick ba- cilli, about twice as long as broad.	Sterile.....	100°	.....	+
7	February 2, 1897.	Granbury	Thick, white.	Faintly acid.	Epithelium, no leucocytes. 1. A few long bacilli. 2. Many short, thick bacilli, 1-2, sometimes in short chains. 3. Yeast.	1. Yeast. 2. Unidentified pathogenic bacilli; grows on all media; addi- tives but does not coagulate milk; does not liquefy gelatin; gas in glucose-agar; stains with Gram; non-motile.	101.6°	Culture fourth day sterile. Cover slip short; thick bacilli, rounded ends.	-
8	February 17, 1897.	Ford	Thin fluid, greenish.	Slightly alkaline.	Few epithelia, many leucocytes. 1. Long, thin bacilli, slightly curved. 2. Short, thick bacilli, 1-1½-2, often in pairs. 3. Few short, thin bacilli.	Short, oval bacillus, of varying length; often in long chains; non- pathogenic; Gram +; capsulated; grows ana- and aerobically upon acid and glucose agar; only anaerobi- cally on plain agar.	102.6°	Uterine culture, short bacilli of varying lengths, grow- ing on all me- dia; non- pathogenic; stain with Gram.	-
9	February 18, 1897.	Hafesh....	Thick white, semi-fluid; gas bub- bles.	Moderately acid.	Much epithelium, few leucocytes. 1. Long chains made up of long, thick bacilli. 2. A few long, thin bacilli. 3. Large oval bacilli. 4. Short, thick bacilli, often in pairs.	1. Yeast. 2. Bacillus subtilis. 3. Short, thick bacilli of varying lengths, from almost coccus forms to 1-3-4, in short chains; non-patho- genic; non-motile; Gram +; grows well ana- and aerobically upon acid and glucose agar, poorly upon plain agar and potato, not at all upon bouillon, milk, and gelatin.	99°	.....	-
10	February 22, 1897.	Cook.	Thick, starch-like.	Very acid..	Much epithelium, no leucocytes. 1. Short, thick bacilli, 1-2, in pairs and short chains. 2. Fairly thick bacilli, 1-3-4. 3. Few yeast.	1. Vaginal bacilli. 2. Bacilli of colon group; non-pathogenic; non-mo- tile; Gram -; colorless growth on potato; acidifies but does not co- agulate milk; gas in glucose-agar.	100.5°	.....	-

No.	Date	Locality	Appearance	Microscopic	Culture	Remarks
11	February 25, 1897.	Granbury.	Not worked through.	Not worked through.	100.6°	See Case 7.
12	March 1, 1897.	Shore.	Thick, starch-like.	Much epithelium, very few leucocytes. 1. Tolerably thick bacilli, 1-4-5, often in short chains. 2. Yeast.	100.8°	Rises of temperature on fifth to tenth days. No cultures; torn peritonium.
13	March 11, 1897.	Duckett.	"	Very acid.	98.8°	
14	March 4, 1897.	Zang.	White; mucous.	Much epithelium, no leucocytes. 1. Fine, thin bacilli, 1-3-4, in pairs, stain poorly. 2. Tolerably thick bacilli, 1-3-4, stain deeply. 3. Short, thick, oval bacilli in pairs. 4. Few cocci, usually diplococci.	100°	Thick bacilli, 1-2-3, sometimes longer; in pairs and short chains; grows only on acid and anaerobic media; non-pathogenic.
15	March 6, 1897.	Coull	Thick, starch-like.	Faintly acid.	101.9°	Few very small, round, transparent colonies on acid agar; tolerably thick bacilli, 1-3-5. 1. Vaginal bacilli. 2. Yeast. Uterine culture sterile. No bacteria on cover glass. Temperature fell at once. Primary rise....
16	March 12, 1897.	Kite.	"	Very acid.	100.2°	Unidentified leptothrix.
17	March 17, 1897.	May	Thick, yellowish.	Very faintly acid.	101.1°	Contaminated; not carried through.
18	March 17, 1897.	Mary Bell.	Thin, yellowish.	"	100.6°	1. Strictly anaerobic cocci in short chains. 2. Short, fairly thick bacilli, 1-1-3; non-motile; Gram +; grow only anaerobically or on acid media. Vaginal bacilli; yeast.
19	March 26, 1897.	Burgonne.	Thick, starch-like.	Markedly acid.	100°	
20	March 27, 1897.	Hart.	Brownish-yellowish, thick fluid, gas bubbles.	Faintly acid.	101.4°	Negative. Discovered by two-hour temperature. Uterine culture, short, thick, anaerobic bacilli. Cannot be grown beyond original tube. Primary rise....
21	April 1, 1897.	Leola Smith.	Thick, starch-like.	Very acid.	100.6°	1. Short, thick bacilli; grow on all media; non-pathogenic.

Date.	Name.	Character- istics.	Reaction.	Cover glass.	Cultures.	Puer- per- ium.	Remarks.	Döder- lein.
22 April 5, 1897.	Morgan....	Thick, starch-like.	Very acid..	Much epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-3-4, alone and in chains. 2. Few diplo- cocci.	1. Bacillus like vaginalis, growing on all media. 2. Anaerobic cocci.	.....	Left hospital be- fore delivery.	-
23 April 26, 1897.	Cropper....	"	"	Much epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-3-4 2. Diplococci. 3. Short, oval ba- cilli, in pairs.	Unidentified short, oval bacilli; will not go beyond second generation.	99°	.....	-
24 April 30, 1897.	Norris.....	"	"	Much epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-3-5, 2. Yeast (?).	Vaginal bacilli	99.8°	.....	+
25 May 3, 1897.	Mitchell....	"	"	Much epithelium, no leucocytes. Tolerably thick bacilli, 1-3-5.	Vaginal bacillus	100.2°	.....	+
26 May 4, 1897.	Amy Brown.	Thick, yel- lowish- green.	Very faint- ly acid.	No epithelium, many leucocytes. 1. Diplococci. 2. Few oval bacilli. 3. Thick bacilli, 1-2-3.	Negative.	99.6°	.....	-
27 May 21, 1897.	Anderson..	Fluid, yel- low.	Faintly acid.	Leucocytes and epithelium. 1. Short, thick bacilli, 1-2-3. 2. Few diplo- cocci. 3. Long thick bacilli with square ends, in chains.	1. Anaerobic, short, thick, gas-pro- ducing bacillus; cannot be culti- vated. 2. Staphylococcus epider- midis albus.	99.4°	.....	-
28 May 24, 1897.	Matthews..	Thick, white, mucous.	Very acid..	Much epithelium, very few leuco- cytes. Tolerably thick bacilli, 1-3-5, often in short chains.	Bacillus like vaginalis, but growing upon agar.	99.6°	.....	+
29 May 25, 1897.	Zante- myer.	Thick, starch-like.	"	Much epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-3-5, often in chains. 2. Few diplococci.	Motile, non-pathogenic bacilli; iden- tified in culture with bacillus enter- itidis.	99.6°	.....	-
30 May 28, 1897.	Gralley....	"	"	Much epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-3-5. 2. Yeast.	Bacillus like vaginalis, but growing upon agar.	100°	.....	+
31 May 31, 1897.	Finch ...	White, fluid; few gas bubbles.	Moderately acid.	Few epithelium, many leucocytes. 1. Short, thick bacilli, 1-1-3, in pairs and short chains. 2. Few diplococci.	1. Short, thick, anaerobic bacilli. 2. Gonococci.	100°	.....	-
32 June 3, 1897.	West ..	Thick, starch-like.	Very acid..	Much epithelium, no leucocytes. Tolerably thick bacilli, 1-3-4.	Vaginal bacillus.	99.8°	.....	+
23 June 8, 1897.	Waller.....	Thin fluid; yellowish.	Faintly acid.	Many leucocytes. 1. Short, oval ba- cilli. 2. Few diplococci. 3. Few tolerably thick bacilli, 1-2-3.	Non-pathogenic organism resem- bling bacillus lanceolatus (pneumo- coccus).	99.8°	.....	-
34 June 16, 1897.	Deekmann.	Thick, starch-like.	Very acid..	Much epithelium, no leucocytes; tolerably thick bacilli, 1-3-5.	Vaginal bacilli	99.4°	.....	+
35 June 22, 1897.	Maggie Bennett.	"	"	Much epithelium, few leucocytes. 1. Tolerably thick bacilli, 1-3-5. 2. Short, oval bacilli, in pairs and short chains. 3. Few diplococci.	1. Bacillus like vaginal bacillus, grow- ing upon agar. 2. Gonococci (?).	100.9°	Only noticed by two-hour temperature. Complete peri- neal tear.	-

36 June 24, 1897.	Mascott...	Thick, starch-like.	Very acid..	Much epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-3-5. 2. Few short, oval bacilli, 1-2, in pairs and short chains.	1. Vaginal bacillus. 2. Yeast.....	99.2°	.....	+
37 July 8, 1897.	Burbage...	"	"	1. Tolerably thick bacilli, 1-3-5, often in short chains. 2. Very few diplococci. 3. Yeast.	1. Vaginal bacillus. 2. Yeast.....	99.5°	.....	+
38 August 2, 1897.	Noon	"	"	Much epithelium, few leucocytes. 1. Short, thick bacilli, rounded ends, 1-2-3. 2. Thin, curved bacilli, 1-5-6, sometimes in pairs.	Sterile.....	102.1°	Uterine cultures and cover slips sterile.	-
39 August 7, 1897.	Martin....	"	Acid	Much epithelium, no leucocytes. 1. Thin, slightly curved bacilli, 1-3-5. 2. Short, thick bacilli, rounded ends, 1-2.	"	99.4°	.....	-
40 September 2, 1897.	McNeet ..	Thick, red- dish.	Fairly acid.	Much epithelium, few leucocytes and blood cells. 1. Tolerably thick bacilli, 1-2-3-5, often in chains. 2. Yeast.	1. Bacillus like vaginalis, growing on all media. 2. Yeast.	100.4°	.....	+
41 September 22, 1897.	Dernis.....	Thick, starch-like.	Very acid..	Epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-3-5, often in chains.	1. Bacillus like vaginalis, growing on all media.	100°	.....	+
42 September 24, 1897.	Eisensee ..	"	"	Much epithelium, no leucocytes. 1. Fairly thick bacilli, varying in length, 1-2-4-5, often in chains. 2. Yeast.	Vaginal bacillus; yeast.....	99.6°	.....	+
43 September 25, 1897.	Loebsack (malarial).	Fluid, yellowish.	Faintly acid.	Few epithelia, many leucocytes 1. Short thick, oval bacilli, usually in pairs. 2. Cocci in pairs. 3. Very thin bacilli, 1-3, usually in pairs, stain poorly.	1. Short, thick, oval bacilli, which do not grow beyond first agar slant 2. Staphylococcus epidermidis albus (?).	101°	Malaria No uterine cultures.	-
44 September 29, 1897.	Williams ..	Thick white fluid.	Fairly acid.	Epithelium, no leucocytes 1. Thin, faintly staining bacilli, 1-3-4 2. Short, thick, oval bacilli, in pairs and short chains. 3. A few diplococci.	Staphylococcus epidermidis albus (?).	102.6°	Eclampsia. Accouchement forcé. Culture, colon bacilli.	-
45 September 30, 1897.	Seymour ..	Thick, starch-like.	Very acid..	1. Tolerably thick bacilli, 1-2-3-5, often in short chains. 2. Few yeast.	Vaginal bacillus.....	99.2°	.....	+
46 October 2, 1897.	Anderson ..	Thick, viscid, clear, at most mucous.	Faintly alkaline.	Much epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-3-5. 2. Short, thick, oval bacilli, 1-2-3, in pairs and short chains.	Vaginal bacillus; yeast.	100°	.....	-
47 October 7, 1897.	George ...	Thick, starch-like.	Very acid..	Much epithelium, no leucocytes. Tolerably thick bacilli, 1-2-5, often in chains.	Vaginal bacillus.....	100.6°	Primary rise	+
48 October 7, 1897.	Plater.....	Thick, white.	"	Much epithelium, few leucocytes. 1. Tolerably thick bacilli, 1-3-5. 2. A few long, thick bacilli in short chains, twice as thick as above. 3. Few yeast (?).	"	100.7°	"	-

Date.	Name.	Character- istics.	Reaction.	Cover glass.	Cultures.	Puer- per- ium.	Remarks.	Puer- per- ium.
49 October 20, 1897.	Winnie Thompson.	Thin, white fluid.	Moderately acid.	Epithelium and leucocytes. 1. Short, thick, oval bacilli in pairs and short chains. 2. Diplococci.	1. Anaerobic oval bacilli. 2. Anaerobic cocci in pairs and small groups. Neither can be grown beyond original anaerobic glucose-agar.	101.4°	Uterine culture negative.	1
50 October 21, 1897.	Dora Spencer.	Fluid, yellowish.	Very faintly acid; almost neutral.	Few epithelia, many leucocytes. 1. Short, thick, oval bacilli. 2. Thin bacilli, slightly curved, 1-3-4, in pairs. 3. Diplococci. 4. Few fairly thick bacilli, 1-3-5.	Fairly thick bacilli, 1-3-5; yellowish growth on agar; motile; Gram +; non-pathogenic; coagulate milk; do not liquefy gelatin.	105°	Uterine culture sterile. Cover glass, bacilli about size of colon.	1
51 October 23, 1897.	Florence Burton.	Thick, starch-like.	Very acid.	Much epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-3-5. 2. Yeast.	Vaginal bacillus; yeast.	99.8°		+
52 October 27, 1897.	Kitlein ..	"	"	Epithelium. 1. Tolerably thick bacilli, 1-3-5. 2. Yeast.	1. Vaginal bacillus. 2. Yeast.	99.6°		+
53 November 11, 1897.	Heise	Fluid, milk-like; small gas bubbles.	Moderately acid.	Much epithelium, no leucocytes. 1. Very thin bacilli. 2. Cocci and diplococci.	Aerobic, very short bacilli (some almost like cocci); cannot be cultivated beyond original plates.	99°		1
54 November 12, 1897.	.....	Not carried through.	Not carried through.	Not carried through.	Not carried through.	99.8°		+
55 November 16, 1897.	Rogers ..	Thick, starch-like.	Very acid.	Epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-3-5. 2. Yeast.	Vaginal bacillus.	100.6°	Single rise on seventh day.	+
56 November 19, 1897.	Green	Fluid, yellowish-green; gas bubbles.	Very faintly acid.	Epithelium, many leucocytes. 1. Short, thick, oval bacilli in pairs. 2. Few diplococci.	Anaerobic coccus; cannot be grown beyond original tube.	99.6°		1
57 November 29, 1897.	Pullen	Creamy yellowish.	Moderately acid.	Epithelium and leucocytes. 1. Short, thick, oval bacilli, usually in pairs. 2. Few tolerably thick bacilli, 1-3, in pairs. 3. Few very large, thick bacilli, 1-5-6, in pairs and short chains. 4. Few diplococci.	1. Yeast. 2. Anaerobic, short, thick, oval bacilli. 3. Staphylococcus epidermidis albus; probably contamination, as it grew only on serum tube.	102.2°	Primary rise, and noted only by two-hour temperature. Uterine cultures sterile.	1
58 December 6, 1897.	Julia Henry.	Thick, white, granular.	Very acid.	Epithelium and leucocytes. 1. Short, thick, oval bacilli, usually in pairs. 2. Diplococci. 3. Thick bacilli, square ends, 1-3-5, in long chains. 4. Few poorly staining, thin bacilli, 1-3-4.	1. Yeast. 2. Anaerobic, short, thick oval bacilli.	99°		1
59 December 27, 1897.	Jennie Naylor.	Thick, starch-like.	"	Much epithelium, no leucocytes. 1. Yeast. 2. Tolerably thick bacilli, 1-3-5.	Vaginal bacilli.	99.8°		+

60	December 30, 1897.	Mamie Duke.	Thick fluid, yellowish.	Faintly acid.	Some epithelium, many leucocytes. 1. Short, thick bacilli, in pairs and short chains. 2. Fairly thick bacilli, 1-4-5, in pairs and chains. 3. Cocci in groups.	1. Yeast. 2. Bacillus like vaginalis, growing on all media. 3. Anaerobic cocci.	99.8°	.....	-
61	January 3, 1898.	Gonell.	White fluid..	"	Epithelium and leucocytes. 1. Tolerably thick bacilli, 1-2-4, in pairs and short chains. 2. Very large, oval bacilli, sometimes in pairs. 3. Diplococci.	1. Bacillus like vaginalis, growing on agar. 2. White cocci which do not liquefy gelatin.	100°	.....	-
62	January 4, 1898.	Byrnes	Thick, starch-like.	Very acid..	Much epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-3-4. 2. Few yeast.	Bacillus like vaginalis growing upon agar.	99.8°	.....	+
63	January 6, 1898.	Christopher.	Thick, yellowish-white.	Moderately acid.	Epithelium and leucocytes. 1. Moderately thick bacilli of all lengths, 1-2-4. 2. Few diplococci.	1. Yeast. 2. Anaerobic bacilli. 3. Gonococcus (?).	99.6°	.....	-
64	January 8, 1898.	Gouldson..	Thick, mucous.	Very acid..	Epithelium, no leucocytes; fairly thick bacilli of all lengths, 1-2-4.	1. Vaginal bacillus. 2. Short, thick bacilli, growing on all media; Gram +; non-pathogenic. 1. Vaginal bacillus. 2. Yeast.	100.2°	.....	+
65	January 12, 1898.	Eversgam..	"	"	Epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-3-4-5. 2. Few thick, oval bacilli. 3. Yeast.	1. Bacillus like vaginalis, growing on agar. 2. Short, thick, oval bacilli, growing on all media but milk and gelatin; Gram +; non-pathogenic. 1. Bacillus like vaginalis, growing on agar. 2. Yeast.	101.4°	Primary rise	-
66	January 14, 1898.	McAllister.	"	"	Epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-2-4. 2. Few short, thick, oval bacilli. 3. Yeast.	1. Bacillus like vaginalis, growing on agar. 2. Yeast.	103.2°	Single rise on fourth day. Not examined vaginally. Uterine culture negative.	+
67	January 17, 1898.	Whitney...	"	"	Epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-2-5. 2. Yeast.	1. Bacillus vaginalis. 2. Yeast.....	99.4°	.....	+
68	January 18, 1898.	Pauline Smith.	"	"	Epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-3-5. 2. Yeast.	1. Vaginal bacillus. 2. Yeast.....	101.2°	Single rise on third day. No uterine culture.	+
69	January 22, 1898.	Laura Allen.	"	"	Epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-2-5. 2. Yeast.	Short, thick, oval bacilli; non-motile; decolorize with Gram; grow on all media.	101.4°	Primary rise	-
70	January 23, 1898.	Beach.	Fluid, yellowish-green.	Very slightly acid.	Epithelium and leucocytes. 1. Short, thick, more or less oval bacilli. 2. Diplococci.	Short, thick, oval bacilli, 1-2-3, in pairs and short chains; motile; gram +; no gas; grow best on anaerobic glucose-agar.	99.6°	.....	-
71	January 26, 1898.	Lena Vear.	Thick fluid; white.	Moderately acid.	Epithelium and leucocytes. 1. Very fine bacilli, 1-3, often in pairs. 2. Short, thick, oval bacilli, suggesting colon.	Tolerably thick, anaerobic bacilli, 1-4-5, often in leptothrix forms; Gram +.	100.3°	.....	-
72	January 31, 1898.	Olivia Jackson.	Thick, yellowish-green fluid.	Very acid..	Epithelium and leucocytes. 1. Thick, oval bacilli, often in pairs. 2. Tolerably thick bacilli, 1-4-5, alone and in short chains. 3. Diplococci.				-

No.	Date.	Name.	Character- istics.	Reaction.	Cover glass.	Cultures.	Puer- pe- rium.	Remarks.	Döder- lein.
73	February 2, 1898.	Lea, Wright.	Thick fluid, milk-like.	Very acid.	Epithelium and leucocytes. 1. Long, thick bacilli, 1.5-6, square ends in long chains. 2. Short, thick, oval bacilli. 3. Short, thick, bacilli. 1-2-3, recalling colon. 4. Very thin bacilli, 1-3-4, in pairs.	1. Yeast. 2. Fairly thick bacilli, 1-2-3, growing only on anaerobic glucose-agar; cannot be cultivated beyond original tube.	100.3°	.....	-
74	February 7, 1898.	Bessie Smith.	Thick white fluid.	"	Leucocytes and epithelium. 1. Toler- ably thick bacilli of varying lengths, 1-2-4. 2. Yeast (?).	Bacillus like vaginalis, but grows on agar.	100.6°	Primary rise	+
75	February 8, 1898.	Matilde Hermann.	Thick white mucus.	Slightly acid.	Epithelium and leucocytes. 1. Short, fairly thick bacilli, 1-2-3, in pairs and short chains. 2. Few very thick, short bacilli, 1-3, often in pairs and short chains. 3. Few long, thick bands of protoplasm, which show no signs of division.	Fairly thick bacilli of all lengths, 1-2-4-5; non-motile; Gram +; grow on all media except gelatin.	99°	.....	-
76	February 10, 1898.	Travers....	Thick fluid, yellowish green.	Moderately acid.	Epithelium, many leucocytes. 1. Dip lococci. 2. Tolerably thick bacilli, 1-2-3, in pairs and short chains.	Tolerably thick, anaerobic bacilli, 1-2-3. 2. Anaerobic cocci.	102.5°	Uterine culture sterile; cover glass, tolerably thick bacilli, 1-2-3.	-
77	March 21, 1898.	Alice Davis.	Thick, white, granulat.	"	Epithelium and leucocytes. 1. Thick bacilli, 1-2, in pairs and short chains. 2. A few tolerably thick bacilli, 1-4-5. 3. Yeast.	1. Yeast. 2. Tolerably thick bacilli, 1-3-4, in chains, growing on all primary media, cannot be culti- vated further.	.....	.....	-
78	May 22, 1898.	Moore.....	Thick fluid, yellowish- green.	Neutral....	Few epithelia, many leucocytes. 1. Cocci alone and in pairs. 2. A few fairly thick bacilli, 1-3-4.	1. Moderately thick bacilli. 2. Cocci growing on all media; under micro- scope are dark and look like uric acid crystals; coagulate milk; liquefy gelatin very slightly.	.....	.....	-
79	May 23, 1898.	Ertl.....	Thick white mucus.	Slightly acid.	Much epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-3-5. 2. Short, thick bacilli, 1-2-3, in pairs and short chains. 3. Yeast, few.	Yeast.....	99.6°	.....	-
80	March 25, 1898.	Heard....	Brownish- white thick mucus.	Faintly alkaline.	Epithelium, leucocytes. 1. Cocci in pairs. 2. Short, fairly thick bacilli, 1-2-3 in pairs and short chains.	Sterile.....	99.3°	.....	-
81	March 28, 1898.	Celleski....	Thick, yellowish.	Slightly acid.	Few epithelia, many leucocytes. 1. Short, fairly thick bacilli, 1-2, usually in pairs. 2. Few fairly thick bacilli, 1-3-4, in pairs and short chains.	Non-pathogenic, gas-producing ba- cilli, fairly thick, 1-2-4; non-motile; Gram +; grow on all media; co- agulate milk.	.....	.....	-

82	March 29, 1898.	Jorio	Thick, creamy white.	Moderately acid.	Epithelium and leucocytes. 1. Cocci. 2. Few oval bacilli 3. Some fairly thick bacilli, 1-2-3.	1. Short, oval bacilli in chains; some almost like cocci, growing on all media 2. Fairly thick bacilli, 1-2, growing only on original plate. Yeast	100.3°	.....	.....
83	March 30, 1898.	Mary Hart.	Thick, bloody.	Neutral (blood).	Few epithelia, many leucocytes. 1. Many long chains of large, thick bacilli, 1-4-5, square ends, with spores near ends. 2. Small, thin bacilli, 1-2-3, in pairs. 3. A few oval bacilli, fairly thick. 4. Yeast.	.....	101.3°	Primary rise, and only noted by two-hour temperature. Secondary syphilis. No uterine cul- ture.	.....
84	April 7, 1898.	Grace Jones.	Thick, stained with blood	Slightly acid (blood).	Few epithelia, many leucocytes. 1. Short, thick, oval bacilli. 2. Toler- ably thick bacilli, 1-3-4, in pairs and chains. 3. Thinner bacilli, 1-2-3, in pairs. 4. Diplococci. 5. Yeast.	1. Yeast. 2. Bacillus like vaginalis, growing on agar, but decolorizing with Gram.	.....	.....	.....
85	April 7, 1898.	Bell	Thick, starch-like.	Very acid..	Epithelium, no leucocytes. 1. Toler- ably thick bacilli, 1-3-5. 2. Yeast.	Anaerobic bacilli, size of vaginal ba- cillus.	100.2°	.....	.....
86	April 9, 1898.	Opie	Fluid, blood- stained	Moderately acid	Epithelium and leucocytes 1. Many small, thin bacilli, 1-2-3. 2. Some short, oval bacilli. 3. A few fairly thick bacilli, 2-3-4. 4. Yeast.	1. Yeast. 2. Anaerobic bacillus, size of bacillus vaginalis.	101.4°	Single rise on seventh day. No uterine cul- ture.	.....
87	April 12, 1898.	Togood	"	Slightly acid.	Few epithelia, many leucocytes. 1. Thick bacilli of varying lengths, 1-2-4. 2. Short, thick, oval bacilli. 3. Cocci, alone and in pairs. Many organisms seen in pus cells.	Anaerobic, fairly thick bacillus, 1-2-4, in chains; non-motile; de- colorized with Gram.	.....	.....	.....
88	April 13, 1898.	Waring	Thick, yellowish- white fluid.	Markedly acid.	Few epithelia, many leucocytes. 1. Thick, oval bacilli, 1-2-3. 2. Cocci.	Non-liquefying cocci	100°	.....	.....
89	April 20, 1898.	Cora Nixon.	Thick, white fluid; gas bubbles.	Very acid..	Epithelium and leucocytes. 1. Short, fairly thick bacilli, 1-2-3, often in long chains. 2. Yeast.	Yeast.. ..	101.2°	Caked breasts. Single rise on fifth day.	.....
90	April 27, 1898.	Ida Dur- ham.	Thick, starch-like.	Moderately acid.	Much epithelium, very few leuco- cytes. 1. Tolerably thick bacilli, 1-2-4, often in short chains.	Vaginal bacillus....	.....	.....	.....
91	April 29, 1898.	Harvey ..	Thick, white, homo- geneous.	Very acid.	Few epithelia, many leucocytes. 1. Tolerably thick bacilli varying in length, 1-2-5, often in long chains. 2. Many cocci. 3. Few very slender bacilli, 1-3-4. 4. Yeast.	1. Vaginal bacillus. 2. Yeast.....	.....	.....	.....
92	May 3 1898.	Bailey	Thin fluid, blood- stained.	Slightly acid.	Few epithelia, many leucocytes. 1. Many cocci. 2. Many short, oval bacilli in pairs. 3. A few tolerably thick bacilli, 1-3-4, in long chains.	Negative	100°

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TWO CASES OF RUPTURE OF THE SYMPHYSIS PUBIS DURING LABOR.

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RUPTURE of the pelvic joints during labor is quite a rare occurrence, because, although Ahlfeld had called attention to it thirty years ago, but few cases are now to be found in the literature. Spontaneous ruptures are especially rare, while cases where the bones have separated during forced operative deliveries are not so infrequent. The joint most often involved is the symphysis pubis, being the weakest and most exposed to injury; but if the widening of the joint be over-great, one or both of the sacro-iliac articulations must give way also. The writer has to report two cases of rupture of the pubis during labor—one where the child was delivered spontaneously, the other being the subject of a prolonged and difficult extraction. The latter case is of especial interest in the light of modern symphyseotomy, as it seems to show how Nature would terminate such a case of obstructed labor.

CASE I.—From the service of the Chicago Lying-in Hospital.

Mrs. M., Russian Jewess, æt. 24. In her family and personal history nothing that bears on the case. Has had three children. labors all normal and easy, cephalic presentations. After the last labor, had fever and pain in the right side, which her physician ascribed to liver disease.

When called to the patient, about midnight, March 7, 1895, she was well on in labor and was at term; uterus near ribs, dextroverted, tonus good, pains very strong, occipito-levo anterior, cervix effaced, os admits five fingers. While getting the pelvimeter from the satchel the membranes broke, the head came down to the perineum and under strong pains was delivered in a very few minutes. The third stage was treated under the expectant plan recommended by Ahlfeld, and at the end of forty minutes the woman expelled the placenta herself; no hemorrhage; afterbirth complete. Child was a male, weighed little less than seven pounds, was forty-eight centimetres long. The head had the following diameters: biparietal, 9 centimetres; bitemporal, $7\frac{1}{2}$ centimetres; suboccipito-bregmatic, $9\frac{1}{2}$ centimetres; occipito-frontal, $10\frac{1}{2}$ centimetres; occipito-mental, $12\frac{1}{2}$ centimetres. The head was not particularly hard, the fontanelles were broad, the sutures yielding. No pressure marks.

Two hours after labor, was called to the patient because she had been bleeding; uterus relaxed, bed full of blood, signs of severe hemorrhage. Massage, ergot, and a hot vaginal douche brought on good uterine contraction, and the bleeding ceased. Saline solution per rectum. In an attempt to cross the legs of the woman after this treatment, as is our custom in the care of hemorrhages post partum, I noticed that this caused pain and could not be accomplished. The next day I found the patient in great pain, and examination revealed the following: Woman flat on her back, upsetting the whole house by her cries. She was unable to move her legs or body in the least, and complained of agonizing pain, which was all referred to the pubis and region of the left sacro-iliac joint. The thighs were abducted, the feet rolled outward. There were no paralyses, as the patient could move each group of muscles in the legs when called on to do so. Patellar reflex exaggerated; no ankle clonus; no anesthesia or other disturbance of sensation; no symptoms from the bladder or rectum. Over the symphysis pubis great tenderness, and on deep pressure an indefinite groove. This was also the spot of greatest tenderness, and all passive as well as active motions of the legs caused pain referred to this place. Tenderness over both sacro-iliac joints, especially the left.

After applying a tight pelvic binder the patient was much relieved; but this lasted only a short time, as later she threw the binder off, the pressure being less bearable than the pain. She was placed in a frame which could be elevated from the bed to enable her to attend to urination, etc.

On the fourteenth day after, patient still in bed; cannot turn on side, adduct or rotate the legs inward, because of great pain in the pubes. Rotation outward and abduction are fairly well performed. On the twenty-second day patient was able to stand on the feet, but could not walk owing to uncertainty and pain in the pelvis; otherwise she was well. On the twenty-sixth day she could walk around the room, but, to use her own expression, waddled "like a duck." At the end of the seventh week patient walked nearly as well as before, and a few weeks after said she had nothing to complain of. Pelvic measurements were taken on the fourteenth day: spines, $23\frac{3}{10}$ centimetres; crests, $25\frac{8}{10}$ centimetres; external conjugate, $18\frac{5}{10}$ centimetres; circumference, 81 centimetres; sacrum sharply and evenly curved—in all probability a generally contracted pelvis.

CASE II.—From the obstetrical service of Mercy Hospital. For the following history I am indebted to Dr. F. J. Kenny, interne of service: Mrs. U., æt. 37, Polish Catholic, married eleven years: has had ten living children, of which six have since died. All the labors normal and easy. Labor began on Friday, March 25, 1898, though patient had had pains for two weeks before. Membranes ruptured that night; pains continued the next day, and, as there was no progress by Sunday morning at 3, the midwife called a doctor. The latter said the child was dead; made three attempts with the forceps, and, this failing, did a podalic version and extraction. The baby was stillborn and was not very large. The third stage was normal. The lochial discharge stopped after the first day; fever began the second; the patient became quite ill, had severe pain in the lower abdomen, could not move in bed, and needed daily catheterizations. Fever and chills have persisted till now, three weeks after the labor.

Examination.—Short, very stout woman, flat on back, legs abducted and rotated outward. Great pain and tenderness over the pubis, to which all pain in moving the legs is referred. Hard, tense, fluctuating tumor over pubis, extending nearly to the navel. This tumor seems to fill out the space of Retzius, has an escutcheon shape, extending a little higher on the left than the right and bulging forward the mons in front. Vagi-

nally the uterus in anteflexion, but pushed upward and backward near the promontory; the bladder similarly displaced by the abscess, which bulges the vaginal walls downward. Temperature 104° F., pulse 100 to 110.

Operation revealed a large abscess around the pubic joint, which was ruptured, the ends of the symphysis being three-quarters of an inch apart and much eroded. The rough bone was scraped and drainage from above to below the clitoris established. The temperature went down rapidly and in twelve days the wound had healed. After a short time the fever rose again, and a distinct induration was felt in the neighborhood of the left sacro-iliac joint. At the same time the patient had symptoms of pyelitis, pain in the left lumbar region, increased frequency of urination with attacks of pain, polyuria, small amount of pus and albumin in the urine. Gradually walking became possible, and the patient was discharged well at the end of six weeks, nine weeks after the labor. Examination of the pus from the abscess showed the streptococcus pyogenes in pure culture.

Ahlfeld¹ up to 1876 collected 100 cases of rupture of the symphysis pubis. In 1889 Schauta² added 12 more, and since then one sees throughout the literature scattered reports of such occurrences. Ahlfeld holds the accident not uncommon, an opinion in which the writer must concur. The cases are either not published or run their course under another diagnosis. Braun says it is quite rare, as in 30,000 labors conducted in the Vienna Lying-in Hospital but 3 cases were observed.

Regarding the causation of this accident much remains to be learned. The pelvic girdle is very powerfully built, and experiments by Baudelocque, Poulet,³ Mohrenheim⁴ have proved that great force is required to disrupt the joints. It is not probable that the powers of labor are so great as to cause a separation of any of the pelvic joints if these are in their normal condition. Parvin⁵ says that a spontaneous rupture of the pubis means some antecedent disease of the articulation. When, however, violent and prolonged attempts at delivery have been made, it is easy to imagine how one or more of the joints would give way to the violence, but even here there are often predisposing causes.

As such may be first named softening of the articulations due to pregnancy. The ancients thought that only when the bones separated was delivery possible, and this Hippocratic teaching lasted throughout the Middle Ages. It was later completely upset, but now a certain amount of relaxation of the

joints with increase of the synovial fluid, and therefore increased mobility, has been admitted. Driver⁶ found some movability of the pubis in nearly all pregnant women. Braun v. Fernwald⁷ found the same when he was instituting comparative tests after symphyseotomy. In the lower animals instances are not wanting of this alteration of the joints. The "sinking of the rump" observed in cows before labor is well known to veterinarians, and is due to the sacrum sliding down between the innominates. In guinea pigs the bones may so separate as to almost disappear in the muscles. In one animal, examined on its back, the legs fell over flat on the table. For further consideration of this interesting subject the reader is referred to Matthews Duncan²² and Francis Denman,²⁶ also Korsch⁴⁰ and Conklin.³⁹

It is upon this softening of the ligaments and mobility in the joints that the advantage of the Walcher-Melli position lies. The ossa innominata can move on the sacrum and thus allow a depression of the pubis and increase in the length and position of the conjugata vera. The same conditions render symphyseotomy practicable, allowing the separation of the joint, the stretching of the anterior sacro-iliac ligaments, and the rotation of the innominates on the sacrum. These changes may become pathological.

Milder manifestations of such pathological relaxation are pain about the pelvis, particularly at the pubis, difficult and painful locomotion, inability to rise after sitting awhile, and tenderness over the affected areas. When the condition is more marked the patient may be bedridden. Such cases have been mistaken for paraplegia, neuritis, etc. The patient may complain of insecurity of the bones of the pelvis, saying that they move on each other. Phenomenoff,⁸ in a case of kyphotic pelvis with rupture of the pubis, found proliferation of the cells of the joint cartilage, something like a chronic inflammation, which he ascribed to the irritation of the ends of the bones due to the irregular shape of the pelvis. Further than this there has been no histological examination of the cases of pelvic relaxation.

Too frequent pregnancies, which keeps the joints softened, would predispose to rupture. Multiparæ do suffer more than primiparæ from it. Previous difficult labors, in the same sense, would be causative, injury keeping up a chronic inflammation. Congenital looseness of the ligaments, and even accumulation of fluid in the synovial cavity, have been demonstrated, but must be very rare. Gmelin, quoted by Braun,⁷ reported

the case of a woman dying in the third month of pregnancy where softening of the ligaments allowed one and a half centimetres separation and there was yellowish serum in the joint. This woman had shown no disease in the preceding pregnancies. Luschka⁷ says that this is analogous to ectopia vesicæ and may be the beginning of the "split pelvis." Where the rupture of the joint occurred in a normal or relatively normal pelvis and with a normal delivery, as Case 1, one of the conditions noted above must be supposed to have existed. In women who have sustained during pregnancy some injury to the joint, resulting in an inflammation, the subsequent labor may cause the rupture (cases published by Ulsamer,⁹ Gmelin,⁷ one that of a woman, pregnant five months, hit by the sword hilt of a cuirassier). Rupture during labor after previous symphyseotomy has not as yet been observed. A joint the seat of tubercular disease or eroded by neoplasm is likely to rupture during labor (Scharf,¹⁰ from medullary sarcoma). Under the same head is osteomalacia, where the weakness is found not alone in the joints, but in the bones too, so that fractures sometimes take place. After the disease has disappeared there is a deposition of bone matter, which may make them heavier than they were normally.

The shape and size of the pelvis have much to do with the likelihood of separation of the articulations. Since the disrupting force is that of a wedge, and the pubic joint will give most to a force which pulls the bones laterally one from the other, it follows that those pelvises are most susceptible to the injury where the head can expand the sides. The generally contracted pelvis is the one usually found in these cases, as in Case 1 reported. In the flat pelvis, on the contrary, where the narrowing is in the antero-posterior diameter, the head needing no expansion of the sides, the rupture rarely takes place, though in many of these cases very powerful efforts at delivery are made. These may result in fracture of the bones as often as rupture of the joint. The bones of a rachitic pelvis are often stronger and thicker than those of a normal skeleton, but cases are not few where the opposite is true. Funnel-shaped and kyphotic, laterally contracted pelvises should be particularly liable to rupture, but, probably owing to the rarity of these vitiations, the reported cases are few. See Ulsamer, quoted by Ahlfeld,¹ where the conjugate was $9\frac{1}{2}$ and the bischiatic diameter 8 centimetres; and Phenomenoff,² where the conjugate was 11 and the transversa 9 centimetres.

When the child is very large the conditions are the same as in contracted pelvis. Zweifel¹¹ records a case where the broad shoulders forced open the joint, and in several of the cases it is noted that the head was large and hard. Nicolas Mayer¹² details an observation where the rupture of the joint occurred during the passage of the calcified placenta (?). The pelvis was osteomalacic. Malposition of the head increases its size relatively, many cases of rupture occurring during forceps operations with the occiput posterior or arrested in the transverse diameter.

The disjunction of the pubis occurs as the result of too great force used in the extraction, secondly by the powers of labor themselves. Forceps operations cause sixty-seven per cent of the ruptures (Havajewicz¹³). Too early or ill-directed bending up of the handles as the head comes over the perineum, perhaps because operating on a low bed, acts like a wedge between the rami of the pubes (Riecke¹⁴). The joint may open during the passage of the aftercoming head, as is told by Scharf,¹⁵ Hofman,¹⁶ and Eidam.¹⁷ Boddaert¹⁸ tells of two cases where he levered the bones apart by means of the vectis, the first time accidentally, the second intentionally. The position of the patient when delivery was effected, as in a case where the knee-chest position and another where the crouching attitude were taken, has been ascribed as a causative influence. Still the joint may give way during an absolutely normal labor, as Case 1 reported shows, and also a case described by Ahlfeld¹ where the baby was born in the intact membranes.

Symptoms.—In those cases where there has been a relaxation of the joints during pregnancy or some disease of their structure, the symptoms attendant upon these conditions are present, prominently pain and difficulty in locomotion. Rupture does not always occur in cases of relaxation; on the contrary, the movability of the joints sometimes facilitates labor, and after it, in a longer or shorter period, the joints regain their firmness. Eldridge²⁰ relates an instance of relaxation where during parturition two fingers could be placed in the joint. Cure was perfect after several weeks. The patient had had the same trouble in a previous pregnancy, but not so aggravated.

In cases where the rupture takes place during a normal delivery, no symptom may call attention to the fact till after several hours, as in the first case reported. But sometimes the woman may say she feels something give way, or the noise of tearing may be audible to the attendants. During an operation

this noise may be distinct as a cracking, tearing sound, similar to that occurring when the knee, for example, is disarticulated. During difficult extractions one sometimes hears a cracking noise without there being a determinable injury to the pelvis. This the writer has on different occasions noticed, but could find no reference to it in the text books. Braun v. Fernwald⁷ mentions it as occurring to him during high forceps operations, and he ascribes it to the partial tearing of the ligaments of the joints. After the pubis has given way the resistance to the advancing part disappears and delivery is rapidly accomplished. A hemorrhage may now take place, if there is a coincident vaginal tear, or from atony of the uterus; and there seems to be a tendency to the latter, as witness Case 1 and the frequency with which postpartum hemorrhage occurs after symphyseotomy. Those accoucheurs who make it a practice to examine every operative case after the third stage, to determine the extent of the local injury, may now and then be enabled to make the diagnosis in this way.

Pain referred to the pubis is a prominent symptom. This pain, if the patient is not anesthetized, is immediate. Every movement is painful and soon impossible, all pain being referred to the pubis and groins. It sometimes shoots along the course of the nerves, making one think of neuritis. If one or both of the sacro-iliac joints are over-stretched, perhaps torn, there is pain located on the side affected, and altogether the patient suffers more. Singularly enough, pain may be absent for the first few days, or begin only when the patient begins to move around.

The rupture may take place during the puerperium, on the occasion of some sudden exertion or violent movement, as, for example, getting on a commode (Galvagni²¹). In these cases it is probable that a partial rupture occurred at the labor and was completed by the over-exertion causative.

There is great tenderness over the pubis. This is often so marked that it precludes the lightest palpation; it is less at first than later, and, while greatest at the pubis, it may extend over the lower abdomen and be a confusing element in the differential diagnosis. Pressure on the iliac crests is at first painful, but later it is grateful, and when kept up by a tight pelvic girdle is distinctly curative.

The almost absolute immobility of the patient in bed and the position adopted by her are quite characteristic, if not pathognomonic. She lies on her back, helpless; the legs are abducted

and rotated outward, so that the foot and knee lie with their outer surface on the bed. It is a sort of pseudo-paralysis, and has surely been often mistaken for acute paraplegia due to injury of the nerves of the pelvis or an acute infectious myelitis. On the other hand, after difficult instrumental deliveries the women are sometimes unable to move in bed and complain of pain in and about the pelvis, without there being a definable rupture of the joints. This may be ascribed to bruising or perhaps some stretching of the ligaments, and is allied to the condition under consideration. It may also be due to the injuries inflicted on the soft parts.

The bladder is in a few cases affected. Where the injury extends to the soft parts we may have urethral or vesical fistulæ and resulting incontinence, which may also be due to tearing of the nerves around the neck of the bladder without visceral lesion. Since after labor retention is more common, this incontinence should always awaken suspicion of grave pelvic lesion. In the first case reported there was no vesical trouble, and in the second there was retention. Bladder symptoms, therefore, are not constant.

In all cases where the separation of the pubic ends exceeds two centimetres some separation of the sacro-iliac joints must occur, and when the ends are more than seven centimetres apart the integrity of the lateral articulations is acutely endangered. Ahlfeld¹ says that most often the right sacro-iliac joint gives way with the pubis, then the left, and occasionally both. In rare cases the lateral joints may tear, the symphysis remaining intact. The tear occurs directly through the cartilage in most of the cases, but may occur alongside it, between it and the bone; this depends on the development of the synovial cavity of the joint. The capsule is almost always completely torn; if any fibres remain intact they are the ligamentum arcuatum.

It was noted that the presenting part seems to immediately overcome all resistance and that the labor terminates rapidly. This is due to the enlargement of the pelvis brought about by the opening of the pubic joint. The changed conditions of the pelvic cavity were studied by Ahlfeld,¹ and but little has been added to his results by the recent experiments and investigations in behalf of symphyseotomy. The available conjugata vera is elongated by one to two and a half centimetres, the lateral diameters about half as much as the amount of separation of the bones; the outlet measurements are increased a little

less than half as much as the amount of separation. This increase in the conjugate is due to the sinking of the ends of the pubis, caused by the rotation of the innominate bones on the sacrum at the ilio-sacral joints and also the direct widening of the pubic symphysis. This mechanical problem has been sufficiently proved by Ahlfeld,¹ Matthews Duncan,²² and Farabœuf.²³

Nature seems to have pointed to symphyseotomy by rupturing the joint and thus facilitating delivery in contracted pelvises. Men were slow to recognize the hint, however, perhaps because the mortality of her operations until the present antiseptic era was such as to discourage its general application. Ayer's²⁴ subcutaneous symphyseotomy comes the nearest to Nature's method of handling these cases, though mature consideration and observation of results might not always confirm the treatment pursued.

As a curiosity may be mentioned a case where a resourceful Italian accoucheur pulled the joint apart by bracing his head against the woman's sacrum and applying his hands to the crests of the ilia.

After the rupture the course of the case varies. If the tear is uncomplicated the blood extravasated is organized, and after a longer or shorter period the joint becomes solid again through fibrous union. This is much facilitated by close approximation of the ends with a properly fitting pelvic girdle. If the tear communicates with the vagina, suppuration is the rule. Sometimes a sequestrum of bone comes away, and the wound granulates up from the bottom if there is good drainage; otherwise burrowing abscesses result and perhaps a general sepsis. Even when no communication with the vagina exists, the infection may travel along the lymph channels to the joint and start up suppuration in and around it. This is favored by non-support of the pelvis, as thus every jar is communicated to the joint and soft parts, continually breaking up the protecting layer of granulations. Clinical experience confirms the preventive value of the girdle as far as suppuration is concerned.

The infection of the articulation may also take place through the blood—*i.e.*, in a patient suffering from a genital infection the pubis may be the seat of one of the pyemic manifestations. Under this head may be mentioned those cases of suppuration in and around the pubis which sometimes complicate general and local sepsis, and stand in relation to the subject under consideration only in so far as the possible bruising of the tissues

around the symphysis predisposes to the infection travelling this way. Denman²⁶ mentions a case of this kind, and they are not very infrequent in the literature on puerperal fever. If the infection resulted in a disorganization of the joint, it would be hard, if called late to the case, to determine whether the separation of the bones were primary or secondary.

The advent of infection to the seat of injury is signalized by a pronounced chill and sharp rise of temperature. These cases almost always go on to suppuration. In a few reports, however, the joints healed, and Niehans²⁶ says the temperature was due to the resorption of blood. I have always had strong doubts about this "resorption fever," and would prefer, in these cases at least, to consider the fever due to a genital infection which left the symphysis intact, and causes for such infection are almost always present in great number. If the fever is assigned to this "aseptic" type, to my mind it must come and go within the first thirty-six hours.

Infection of the joint, once begun, proceeds rapidly and the symptoms are usually severe. Repeated chills, high temperature, pain, swelling of the mons, show where the trouble is. Pus forms rapidly and fills out the connective tissue around the joint, pushing the bladder and uterus backward, the urethra downward, the peritoneum upward, the mons forward. It may burrow around the sides of the pelvis and infect the sacroiliac synchondroses, down along the rami of the pubes into the thighs, or in any direction, which greatly aggravates the suffering of the patient and the gloominess of the prognosis. If the pus finds an early exit or the abscess is drained before much burrowing has taken place, the pains and febrile symptoms rapidly disappear and the patient almost always gets well. Dührssen²⁷ has with great effort proved this, which every one would admit without argument. The nature of the joint, the profusion of veins and lymphatics around it, predispose to general infection, as witness the rapidity of onset and severity of the general symptoms; and this result may in rare instances not be prevented by the best treatment. The case then resembles any other general infection.

Where the joint does not become infected the union in from three to six weeks is usually complete. Some unsteadiness in the gait may be observed for a longer or shorter period, and its peculiarity is well characterized by the words "like a duck." Cases are on record, however, where many years elapsed before the joint became solid—*e. g.*, Denman,²⁶ eight years;

Lenoir,²⁸ seventeen years; and in one case, Debout, quoted by Braun,⁷ fifty years—that is, the case was incurable. These were cases of relaxation without rupture, or perhaps with rupture superadded—a point, at this date, indeterminable.

In cases where the ligaments have softened to a pathological degree during pregnancy, after labor they regain their normal tonicity almost always in a few weeks to a few months. The patient may be free from inconvenience permanently, or the condition may recur in subsequent pregnancies, when it is usually much aggravated and may result in permanent confinement to bed.

In simple rupture of a relatively healthy joint the union is by fibrous tissue, as after symphyseotomy. In a very few instances callus formation was reported, and in one this impeded a subsequent delivery so that craniotomy was needed. In other cases the pelvis was permanently enlarged, the pubis allowing a space bridged by tough fibrous tissue, and the following labors were rendered normal. This is a sensible method for Nature to adopt to correct a faulty pelvis. Modern operators have sought to imitate this in their symphyseotomies by osteoplastic operations on the joint—see, among others, Frank.²⁹ Many cases are on record where a woman was enabled to give birth spontaneously through permanent enlargement of the pelvis due to a previous symphyseotomy.

In spite of these many points in favor of the operation, the writer believes that the indications for the section of the pubis should be very restricted, particularly in private practice.

Diagnosis.—The diagnosis of this condition may be easy or difficult. In former years many times the diagnosis was first made on postmortem; and, while this is rare now, it often happens that suppuration around the joint and an operation discover the true condition of affairs. The cases for diagnosis may be divided into three classes: first, those of relaxation of the ligaments; second, rupture of the joint; and, third, those cases where suppuration around the joint leads later to its disorganization. Then, again, there are many other conditions, having nothing to do with a symphyseal lesion, which nevertheless present similar symptoms and demand consideration in the differential diagnosis.

Cases of relaxation of the pelvic articulations of mild degree certainly exist quite generally, and cause symptoms such as pain and drawing sensations in the loins and back, difficulty in locomotion, inability to rise after sitting awhile, instability

when erect, etc. These symptoms are worse as term approaches, and in marked cases the gravida may be bed-ridden. The history makes the diagnosis, but this condition predisposes to actual rupture, and this is diagnosed by the sudden appearance of the characteristic symptoms during the labor. An acute relaxation of the symphysis described by Conkling,³⁰ not preceded by marked symptoms during pregnancy, is hard to understand. These cases should properly be called rupture of the joint.

In the main, difficulty in diagnosis will appear at two points: first, a few hours after labor, when one will have to determine whether there is a disruption of the symphysis or one of the various forms of paralysis following parturition from nerve pressure by forceps, etc.; and, second, on the third to the fifth day, when the patient has a chill and rise of temperature, where one will have to reckon with acute sepsis, pelvic cellulitis, peritonitis, etc.

At the internal examination, on the completion of an operative delivery, to determine the existence and extent of the operative lesions—a procedure which cannot be too highly recommended—a separation of the pubis could scarcely escape detection. If during the labor a crack were audible, the reason for the examination is all the more urgent. A distinct groove may be felt from the skin, and certainly from the vaginal surface. By pressing the sides of the pelvis together and suddenly relieving them, the vaginal finger feels a distinct movement at the pubis. Pulling on one leg causes descent of the corresponding ramus, especially marked if the sacro-iliac joint be torn also (Jaquier³¹).

When the patient is not anesthetized, the characteristic position in bed, the pain referred to the groins and pubis, the inability to move the legs, should insist on investigation; and tenderness over the pubic joint, possibly a deep or wide groove here or by vaginal examination, relief of the symptoms when the pelvis is firmly held together, should seal the certainty of the diagnosis. The absence of symptoms of nerve lesion, as paresthesia, anesthesia, paresis, and paralysis of individual or groups of muscles, presence of the reflexes, etc., clears the diagnosis of doubt. Bladder symptoms belong to both conditions and are therefore equivocal.

If the condition is masked for the first few days and the advent of fever claims the attention of the physician, in their order must be shut out acute sepsis and pelvic inflammations,

acute neuritis, myelitis, cystitis—or even just a full bladder—hysteria, pressure on the nerve plexuses from pelvic exudate. If only the possibility of a rupture of the pubic joint be considered, the case clears up at once, but one must remember that such an injury may have the same cause and coexist with some of the conditions mentioned.

Still later, when the disorganization of the pubis is complete and an abscess has formed around the joint, one must determine whether the pubic disease is primary or only one of the manifestations of a general pyemia. Here the history of the labor and of the first few days, the absence of other focal supuration, the determination by vaginal examination that the uterus and adnexa are intact, make the diagnosis. As far as treatment is concerned, however, at least the symphyseal lesion must be discovered, for even if there are other foci of supuration the pubis must be drained at once.

Prognosis.—The mortality from this accident is to-day very much less than formerly, which is due to the acuter diagnostic methods and the antiseptics of the period. If recognized early, only exceptionally should the woman die; and even after supuration has occurred, almost always recovery ensues on the evacuation of the pus. If more than the pubic joint suppurates the case is quite serious, and a tendency of the abscess to burrow makes the recovery prolonged or causes death by hectic. This emphasizes the importance of early diagnosis and active treatment.

Cases vary regarding the length of time required before recovery is complete. If there is no infection of the joint the woman will be around in three to four weeks, the same as after an aseptic symphyseotomy. If there is infection the cure takes four weeks to four months, but may exceptionally take years. A certain amount of motion may be perceptible between the ends of the symphysis, but this may not affect locomotion; or there may be incontinence of urine when the patient leans over or carries a heavy load, the same as is sometimes observed after symphyseotomy. As was stated previously in this article, after normal labors a certain movability of the joint may be demonstrated. In some of the reported cases, however, the inability to walk has persisted for years, as was cited under symptomatology. Dr. T. A. Olney narrated a case where after many months the joint had to be nailed together.

As to the length of the convalescence, it seems that those

cases in which there was rupture of a relatively healthy joint get well quicker than those in which there was relaxation during pregnancy and then the softened ligaments gave way during labor. Where the disorganization of the symphysis is part of a general sepsis, of course the latter governs the prognosis.

Treatment.—The main points in the treatment have at various places been touched upon. If the relaxation of the pelvis during pregnancy becomes annoying, a tight pelvic girdle will almost always give instant relief, which continues as long as the girdle is worn. After labor the rigidity of the ligaments comes back much sooner with the aid of this simple article, and may remain absent till it is put on.

When the fracture is determined after labor a pelvic binder may be improvised with a roller towel, but the woman may not tolerate any constriction long, as Schauta³² also observed. Any means of immobilizing the pelvis by adhesive straps, plaster, etc., such as are used by symphyseotomists, may be employed. The use of a frame arranged with a suspension apparatus, so that the patient can be raised from the bed for urination, etc., is to be recommended.

In cases where the diagnosis is made at the time of labor Dührssen advises immediate suture. The cases get along as well without it, and experience with symphyseotomy shows it is not necessary; besides, there is danger of infection. It is a general rule in surgery not to operate on a bruised or fractured joint if it can be avoided.

As soon as there is the certainty of infection of the joint, thorough drainage should be provided. If there is doubt, I believe it is justifiable to pass an aspirator needle between the bones, under the strictest precautions. The wound after drainage should heal up from the bottom.

If there are burrowing abscesses each should be opened at the nearest available point, the sooner the better. To temporize is to lose ground. If one of the sacro-iliac articulations is affected the same treatment is in order; its execution, however, is very much more difficult. General surgical principles should obtain here as before. An infiltration around the sacro-iliac joint may be absorbed, as several cases in the literature and Case 2 reported show.

For the cases in which union of the ends is delayed the continuous application of the pelvic girdle is advised. For obstinate cases the joint might be wired or nailed together or

resected. The principles of the treatment of ununited fracture are available here, but, for obvious reasons, success is not so constant.

In a subsequent labor, should difficulty present itself, symphyseotomy might be done, and if a large callus prevents delivery Cesarean section or craniotomy would have to be considered.

Since this article has gone to the publisher another case of rupture of the symphysis pubis has come under the care of the writer. This patient is 36 years old; had a hard instrumental delivery twelve years ago, from which she has been an invalid. She has had two difficult operative deliveries since, each time stillbirths. Her gait is laborious and waddling, and there is evident sinking and rising of the hips. The pelvis is generally contracted. The pubis is entirely absent, a space of two inches between the rami being spanned by a thin, tough membrane one inch broad. The innominales move freely on the sacrum and without pain. The patient is now near term, and after her labor her case will probably be published in this JOURNAL.

3634 PRAIRIE AVENUE.

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CASTRATION FOR RUDIMENTARY UTERUS ABSENCE OF
VAGINA, MENSTRUAL MOLIMINA.¹

BY

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B. L., single, age 20, a domestic, consulted me July 9, 1897, for non-appearance of menstruation. She stated that she had never had any menstrual flow, but that at the age of 15 she began to suffer with attacks of vague pains in the lower part of the abdomen and in the pelvis. For the first three years these attacks would recur every four weeks, lasting three or four days. During the following two years the attacks grew more frequent and more severe, and for the past six months they would recur every two or three weeks and last five, six, or seven days. so that she was unable to fill her position as domestic, being compelled to keep to her bed most of the time. She has four sisters older than herself, all of whom are married and have several children.

She had been under treatment for a time at the out-door service of a well-known hospital, where some operation had been done, which was followed, she says, by a show of blood for about four or five hours.

On making the usual digital examination the finger readily entered a canal, apparently the vagina, which, however, embraced the finger closely for a greater distance than is common. My suspicions were at once aroused, and they received confirmation in noting, on withdrawing the finger, the escape of a few drops of a clear, limpid fluid. I recognized at once that the finger had traversed the urethra and that the escaped fluid was urine. Thereupon I instituted a careful and thorough examination.

The girl was plump, well nourished, and of medium size. The breasts were well developed and rather large. The axillæ were covered with hairs. The pubes was thickly covered with hair in the normal manner; the labia majora and minora were

¹ Read before the American Gynecological Society at its twenty-third annual meeting, held in Boston, May 24-26, 1898.

normal in size and in appearance; the clitoris was well developed. On separating the labia an irregular fringe was seen surrounding an oval opening—the urethral orifice. The distance separating the lower border of the meatus and the upper border of the anus was one centimetre. This space was covered with a tender skin, rather reddish in appearance, presenting a shallow depression and resembling somewhat a fourchette. There was therefore total absence of a vagina.

On bimanual examination with a finger in the rectum, an indistinct resistance could be felt running transversely at about the normal position of the uterus. At either extremity of this resisting band a small body was palpated, lying against the pelvic wall and about the size of an almond. These bodies were taken to be the ovaries. With one finger in the rectum and another in the urethra and bladder, the thickness of the tissues separating them was no greater than would be formed by the bladder and rectal walls. Nothing resembling a uterus could be detected.

A cystoscopic examination of the bladder with a No. 12 cystoscope (Kelly's) revealed dilated and tortuous vessels in the fundus and a few small red patches in the trigonal area. The patient had full control over the vesical sphincter and made no complaint of any bladder disturbance. Her intelligence being of a rather low order, I could not ascertain satisfactorily whether or not she had any sexual desire, but she positively denied ever having cohabited.

On July 21, at St. Mark's Hospital, I performed laparotomy with the object of removing the ovaries in order to relieve the patient of her menstrual molimina. After opening the abdomen the Trendelenburg position was employed, so that a good view of the pelvic contents could be obtained. Passing transversely across the posterior aspect of the bladder a fold of peritoneum was seen and felt. This was about three inches long and about an inch wide. At no part of it was any thickening to be made out. Immediately posterior to this fold were the sigmoid flexure and rectum. On either side, lying on the external iliac vessels just above the brim of the true pelvis, was a small oval body, not unlike a small ovary in shape and in size, and covered completely with peritoneum. These bodies were about three inches apart and connected by the fold of peritoneum above described. They had no pedicle. They were removed by seizing them in the bite of a forceps and snipping

them off with scissors. The resulting wounds were closed with continuous catgut suture. The first impression gained was that these bodies were the ovaries, presenting a not understood abnormal condition. But on further reflection and closer examination their true nature was surmised—they were probably rudimentary cornua; they certainly were not ovaries. Accordingly a search was made for the ovaries, and, when almost in despair of success, the house surgeon, Dr. Schonenberger, caught a glimpse of the left ovary. It was hid behind the intestines and lying on the pelvic wall about midway between the true and false brims, and had a small, undeveloped tube attached to it. It lay some distance from the left cornu, with which it apparently had no connection.

Having found the one ovary, it was concluded that the other must also be present. The whole right side of the abdomen was carefully and thoroughly explored, and after a long search a small oval body was detected lying near the vertebral column at about the level of the umbilicus. The abdominal incision had to be enlarged to the umbilicus before this small body could be brought into view. It proved to be a normal-looking ovary, presenting a ruptured Graafian follicle on its surface. There was no tube attached to it, nor could any structure resembling a tube be found anywhere. The ovary lay firmly attached at the side of the vertebral column; there being no pedicle, it had to be cut away with scissors, and the resulting wound was closed by a continuous catgut suture, the application of which presented considerable technical difficulties owing to the inaccessibility of the part.

The patient made a rapid and uneventful recovery.

July 31, 1898: Has remained entirely free from symptoms since the operation, and has been able to fill her position satisfactorily ever since her discharge from the hospital.

The removed structures were kindly examined by Dr. F. S. Mandlebaum, pathologist to Mount Sinai Hospital, who reported as follows:

“The two large bodies are somewhat ovoid and flattened in shape, and measure, after shrinkage in alcohol, 4x2x1 centimetres and 3.5x1.8x1.2 centimetres respectively. At the end of one of these bodies (left) is a loosely connected appendage with a rudimentary fimbriated extremity. Sections from these bodies show a cortical layer of short connective-tissue fibres and a stroma of spindle cells and looser connective-tissue fibres

abundantly supplied with small blood vessels. In the lower layers of the cortical substance are many typical Graafian follicles, mostly of a uniformly small size. Near the centre of the section is a cyst-like cavity from which most of the contents has escaped, but that which remains shows some blood cells and a few larger cells not unlike those found in a normal corpus luteum. These bodies are, therefore, undoubtedly ovaries.

"The two smaller bodies measure (after shrinkage in alcohol) 3.2x1x1.2 centimetres and 2.4x1.4x1.4 centimetres respectively. They have a rather even and smooth surface. Sections show a thin cellular covering (peritoneum), the remainder of the section being composed entirely of spindle-shaped muscular fibres interlacing in every direction and connected in bundles by loose connective tissue. A few blood vessels are seen here and there, some being veins of a fairly large calibre. Cross-sections do not show any cavity or mucous membrane. These bodies, therefore, constitute unmistakable rudimentary solid uterine horns."

It is appropriate that the foregoing case should be reported here, since the first case on record of castration for menstrual molimina with rudimentary uterus and vagina was presented to this Society at its first meeting, in 1876, by its distinguished Fellow, Dr. E. R. Peaslee. Unfortunately the patient died, sixty hours after the operation, from septic peritonitis.

After a pretty thorough search of the literature I have been able to collect 26 cases, inclusive of my own, with rudimentary development of Müller's ducts, in which the ovaries were removed to relieve menstrual molimina. All of these cases had several features in common. The breasts and external genitals were fully and normally developed in all but two cases; in one of these there was simply a deficiency of fat tissue in the labia majora and minora. In those cases in which it was noted the type of the pelvis was of the female sex, as it was also in the writer's case.

The urethra was of an unusually wide calibre in 11 cases, admitting readily the index finger, and it is interesting to note that in these there was a total absence of a vagina. In three cases in which it was noted that the urethra was of normal calibre the vagina was represented by a depression of less or greater depth, and in one case there was a blind sac of the depth of five centimetres (Case 11).

The great width of the urethra in these cases is not due to the abnormal use of the canal for sexual purposes. In only one of the cases was such a fact substantiated (Case 24), and this was the only case in which incontinence obtained. There must always be considerable dilatation of the urethral canal prior to the possibility of its being used for such a purpose. In the writer's case, though the index finger could be passed into the bladder with ease, there was perfect control over the vesical sphincter. I made a cystoscopic examination of the bladder and found that the blood vessels traversing the fundus were unusually large; otherwise the bladder was normal. At the time of the operation a colleague who was present was invited to introduce his finger into the bladder. His index finger was rather thick, and as a consequence the patient suffered from incontinence for a couple of days afterward.

Schröder was the first to offer an explanation for the occurrence of the large calibre of the urethra. The part of the allantois, in such abnormal developments, which later should become constricted to form the urethra, remains abnormally wide.

The uterus, either in the form of a band of muscular tissue or of one or two rudimentary horns, was present in every instance. Total absence of the uterus probably never occurs, as Burrage¹ has stated, except in cases of acephalous monsters or fetuses with spina bifida or other malformations incompatible with life.

Both ovaries were found in 19 cases. In 7 cases (Langenbeck, Werner, Warnek, Boursier, H. Fritsch, Schwartz, and Czempin) only one ovary was found. Keiffer (15) could not find either ovaries or any tissue representing the uterus. But it cannot be assumed positively that the other ovary was absent in these cases.

In Langenbeck's case it was presumably present, as the patient continued menstruating for twenty years afterward. The same presumption must be entertained in regard to Boursier's case (21), for the menstrual molimina persisted with the same severity after the removal of the one ovary. Besides, the exploration of the abdominal and pelvic cavities was made merely with the hand and not with the aid of sight. Schwartz's patient (Case 26) commenced to menstruate through the artificial vagina after the extirpation of the only ovary found.

Czempin (Case 24) operated through a perineal incision, and

¹ American Journal of the Medical Sciences, 1897

his failure to find a second ovary carries no weight. The result on the menstrual molimina, in his case, of removing the only ovary found, is not stated. It is therefore only in Warnek's¹ case (11) that the cessation of the menstrual molimina after the operation would form an argument in favor of the absence of the second ovary. We have seen what a prolonged search was necessary in my case to discover the one ovary, and how easily the second ovary might have been overlooked, from its very unusual location, had the search not been made very extensive and thorough.

In several of the cases in the table the ovaries were found at some distance from their normal position, but in none were they found at such a distance as the right ovary was in the writer's case. It lay near the vertebral column, at a level slightly above that of the umbilicus.

From the foregoing it may readily be conceived what weight can be attached to the cases, not infrequently met with in literature, in which it is stated that the uterus and ovaries were entirely absent after a bimanual examination either with or without narcosis. Peaslee, Thomas, and Emmet failed to detect the left ovary in Case 1, even with a hand in the rectum, the patient being deeply anesthetized. In Marie B. Werner's case (7) the second ovary (right) was not found at the operation, but at the subsequent autopsy.

The results of the operation were as follows: There was a satisfactory cure in 15² cases, the patients being under observation from a few months to a year and a half. In 8 cases nothing is said in reference to the influence of the operation upon the preceding menstrual molimina. Two died as a result of the operation, and one case was not improved, but the operator (Keiffer, 15) failed to find either ovary.

These cases, apart from their rarity and abnormal features, receive additional interest at the present time, when it is the custom in certain high quarters to leave the ovaries behind in hysterectomies for disease of the uterus, so as to avert the distressing symptoms that sometimes follow the artificial menopause. This procedure creates an almost parallel condition to that existing in these cases. The woman has functioning ovaries, but no uterus to discharge the blood that periodically

¹ The symptoms in Fritsch's case (23) were probably due to the pelvic peritonitis, and hence the cure is no evidence of the absence of a second ovary.

² Strauch's second case is included in the list of cured, though he himself considers it as a failure.

Operator.	Source of literature.	Physical condition.	Nature of menstrual molimina.	Results.
1 E. R. Peaslee.	Trans. of Amer. Gyn. Soc., vol. I., 1876.	Breasts and external genitals normal. Vagina in form of a blind sac two and a half inches deep. Two normal ovaries presenting several cysts. Autopsy revealed a small solid uterus with two cornua, over-looked at operation.	Hystero-epilepsy for eight years.	Death in sixty hours from peritonitis.
2 Tauffer.	SeparatAbdruck aus der Pester Med. Chir. Presse, 1878 (quoted by Kleinwächter, Archiv. für Gyn., Bd. xvii., 1881).	Not stated in full. Removed two ovaries which were adherent and contained numerous cystic follicles.	Severe periodical pain, which grew worse after marriage. Threatened with mental disturbances.	Cured during the three months under observation.
3 Von Langenbeck.	Achte Congress der Deutschen Chirurgie, April, 1879.	Breasts and external genitals well developed. Total absence of vagina. Urethra widely dilated; periodical flow of blood from it. Uterus small and in the form of a single horn. Right ovary and tube found and extirpated. Left adnexa said to be absent.	Hystero-epilepsy. Menstrual flow (scant) through urethra and attended with great pain.	Menstrual flow per urethram persisted, but not attended with pain. Vide further report of case (Holländer, 25).
4 Thos. Savage.	The Obstetrical Journal of Great Britain and Ireland, 1880.	Breasts well developed. External genitals normal. No vagina. Two normal tubes and ovaries, which were removed. Uterus represented by a single body the size of a bean.	Severe periodical abdominal and pelvic pains.	Not stated.
5 Kleinwächter.	Archiv. für Gyn., Bd. xvii., 1881.	Breasts and external genitals normal. Urethra widely dilated, admitting index finger readily. Both ovaries easily found and removed. Tubes thinner than usual, fibroid normal. Uterus in the form of two small solid horns.	Severe menstrual molimina, recurring every four weeks and attended with hematemesis.	Next menstrual period passed off without any disturbance.

6 A. Martin.	Schmidt's Jahrbücher, 186, No. 2.	Condition of external genitals not stated. Extirpated two ovaries. Uterus very rudimentary.	Menstrual molimina every four weeks.	Not stated.
7 Marie Werner.	AMER. JOUR. OF OBSTER., 1884.	Condition of external genitals not stated. Left ovary and tube easily found and removed, and also left horn of uterus. Right tube and ovary not found. At autopsy right tube and ovary discovered, as was also the other horn of the uterus.	Headache and pain in the back. Latterly incapacitated from working.	Died forty-five hours post op. from septic peritonitis.
8 Max Strauch.	Zeit. für Geburt. und Gyn., Bd. xv., 1888.	Breasts well developed. Pelvis of the female type. Left inguinal hernia. External genitals moderately developed, though somewhat deficient in adipose tissue. Urethra widely dilated, admitting small finger readily. Vagina absent. Both ovaries removed; left found near linea innominata. Uterus represented by a cord-like structure the thickness of a lead pencil.	Severe abdominal and pelvic pains, recurring every four weeks. Latterly occasionally vicarious menstruation.	Complete cure.
9 Max Strauch.	Ibid.	Pelvis of the female type. Breasts well developed. Labia majora poorly developed. Urethra of wide calibre. Clitoris small. Introitus of vagina closed with a loose skin, which can be depressed by finger five centimetres. Two ovaries found and removed. Uterus in the form of a single solid horn.	Menstrual molimina recurring every second and fourth week. Condition unsatisfactory and attended with pain.	Pain in abdominal incision, which spread all over the abdomen. Developed a gastric neurosis. No recurrence of menstrual molimina.
10 Düvelius.	Zeit. für Geburt. und Gyn., Bd. xvi., 1889.	Breasts and external genitals well developed. Vagina absent. Two normal tubes and ovaries, which were removed. Uterus in the form of two solid horns, the size of a hazelnut, also extirpated.	Headaches, recurring every four weeks and lasting three to four days. Latterly in addition severe backache.	Not stated.
11 L. N. Wardenek.	Zeit. für Geburt. und Gyn., Bd. xvii., 1889.	Breasts well developed. Pelvis of the female type. External genitals well developed. Urethra not dilated. Hymen torn. Vagina a blind sac two fingers' breadth wide and four and a half centimetres deep. Rudimentary uterus with absence of cervix. Right adnexa normal; extirpated; left adnexa not found.	Menstrual molimina recurring every second and fourth week. Condition unsatisfactory and attended with pain.	Cured two months later.

Operator.	Source of literature.	Physical condition.	Nature of menstrual molimina.	Results.
12 A. Martin.	S. Frank, Zeit für Geburt. und Gyn., Bd. xviii., 1890.	Breasts and external genitals well developed. Urethra of wide calibre. Removed two ovaries and tubes, which were apparently normal. Uterus in the form of two small horns; left horn extirpated.	Severe menstrual molimina, recurring every four weeks.	Fifteen months later had had no recurrence of menstrual molimina, but suffered from "hot flashes" all over the body, from which she had not suffered prior to operation. Not stated.
13 L. Frommel.	Münch. Med. Wochen., 1890, No. 15.	Breasts and external genitals well developed. Urethra of wide calibre. Uterus size of an English walnut, with a left rudimentary horn; extirpated both; former had a small cavity. Ablated two ovaries, which were of large size and presented numerous cysts and Graafian follicles. Right ovary in an abnormal position.	Menstrual molimina every four weeks.	
14 M. Delagènière.	Annales de Gynéc. et d'Obstétrique, vol. xxxv., 1891.	Total absence of vagina and of uterus (sic). Both ovaries found lying in the iliac fossae and removed.	Periodic attacks of pulmonary congestion.	No recurrence of the pulmonary attacks.
15 M. Keiffer.	Bull. de la Société Belge de Gynéc. et d'Obstét., 1892.	Vulva normal in appearance. Vagina ended in a blind sac three centimetres deep. Laparatomized. Explored pelvis and abdominal cavities with hand and could find no trace of uterus or ovaries. Found a body lying between the umbilicus and anterior spine of ilium, which was taken to be a displaced and fixed kidney.	Severe menstrual molimina for several years.	
16 Oscar Bloch.	Nordiskt Medicinskt Arkiv., 1891. Bd. xxiii., and Jahres. Geb. u. Gyn., 1892.	Breasts and external genitals well developed. Urethra of wide calibre. Vagina absent. Extirpated both ovaries, which were slightly enlarged and presented several cysts. Uterus size of a walnut	Severe abdominal and pelvic pains every four weeks. Latterly very much more severe and almost continuous.	Cured six months after operation.

17 H. Fritsch.	Reported by E. Gläser, Cent. für Gyn., 1892.	Breasts and external genitals well developed. Urethra widely dilated. Vagina a blind sac two centimetres deep. Dermoid cyst of the left ovary size of a goose egg. Right ovary normal but unusually large. Uterus in the form of two horns, the size of a plum and a cherry respectively. Extirpated both horns and the ovaries.	Severe abdominal pain every four weeks. Later pelvic pain in addition, and for past few months pain almost continuous. No vicarious menstruation.	Cured four months after operation.
18 Oskar Beuttner.	Cent. für Gyn., 1893.	Breasts and external genitals well developed. Vagina a shallow blind sac. Both ovaries and tubes found and removed; also uterus in the form of two solid horns.	Continuous pain in the abdomen, which gradually grew worse. Latterly constant vomiting.	Not stated.
19 Stratz.	Jahresbericht der Geb. u. Gyn., 1893.	Condition of external genitals not stated. Both ovaries found and extirpated.	Severe menstrual molimina.	Not stated.
20 W. Fischel.	Prager Med. Woch. xix., 1894.	Feminine habit. Breasts and external genitals well developed. Vagina ends in a blind sac five centimetres deep. No trace of an os externum or vaginal portion. Urethra not dilated. Uterus in the form of two rudimentary horns. Both ovaries found in the iliac fossæ and extirpated. They were unusually large and studded with cysts the size of peas.	From the eighteenth to twenty-second year noticed monthly a few drops of blood from the genitals. Since marriage no show of blood, but instead has severe abdominal pain every four weeks, lasting six days.	Patient passed from observation shortly after the operation.
21 A. Eoursier.	Congrès périodique International de Gyn. et d'Obstétrique, Bruxelles, 1894.	Breasts and external genitals well developed. Vagina represented by a depression one centimetre deep. Urethra of wide calibre. A very small rudimentary uterus. Right ovary and tube found and extirpated. Left tube and ovary not found.	Severe menstrual molimina every four weeks.	Menstrual molimina just as severe after the operation as before.
22 M. Jacobs.	Ibid.	Breasts and external genitals well developed. Uterus represented by two small triangular bodies. Both ovaries and tubes normal. They were removed, as was also the rudimentary uterus.	Severe menstrual molimina every four weeks.	Cured.

No.	Operator.	Source of literature.	Physical condition.	Nature of menstrual moulins.	Results.
23	H. Fritsch.	Reported by G. Kirchgässer, Cent. für Gyn., 1896.	Breasts and external genitals well developed. Vagina narrow, ending in a blind sac four centimetres deep. Right ovary found amid firm and extensive adhesions and extirpated. Left adnexa not found. Uterus, in the form of a single solid horn, excised.	Began to suffer three years ago at the age of 32 with abdominal pain every four weeks, lasting from three to four days. Later, in addition, pelvic pains and severe nervous disturbances.	Cured four months after operation.
24	Czempin.	Zeit. für Geburt. und Gyn., Bd. xxxv., 1896.	Breasts and external genitals well developed. Urethra very widely dilated and used for sexual intercourse and as a consequence of this, incontinence of urine. Extirpated rudimentary uterus and one ovary through a perineal incision. Other ovary said to be absent. Made an artificial vagina.	Severe periodical pains and incontinence of urine.	Not stated.
25	Holländer.	Zeit. für Geburt. und Gyn., Bd. xxxv., 1896.	See Von Langenbeck's case (3). Eighteen years after first operation a fluctuating tumor felt through rectum. Laparotomy by Israel in 1890, who could not find the second ovary among the adhesions. In 1895 a third laparotomy by Holländer, who found an enlarged uterus with a submucous fibroid. In 1896 Holländer made a perineal section, found remains of a vagina attached to the uterus. Made an artificial vagina.	.....	Six months later: Menstruating and cohabiting through the artificial vagina. No further menstrual flow per urethram.

26 Ed. Schwartz.	Revue de Gyn. et de Chirurgie abdom- inale, vol. i., 1897.	Breasts and external genitals well develop- ed. Vagina totally absent. Uterus in the form of one horn (left), to which a tube and ovary were attached. Right tube and ovary not found. Between bladder and rectum there was a cystic tumor size of a hen's egg; this proved to be the upper part of the vagina filled with fluid. By a plastic operation made a continuous vagina.	Menstrual every four weeks from her fifteenth year con- tinued until her nine- teenth year. (20 years old now.)	molimina Slight menstrual flow on two occasions after the operation and presum- ably without pain.
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flows as a consequence of such function.' Why, in the one instance, pain and other symptoms attend the condition, and in others there should be a total absence of any untoward phenomena, is a question which the writer frankly confesses he is unable to solve. He would further state that until a number of cases have been carefully reported, showing the absence of any untoward results from retaining the ovaries in cases requiring removal of the uterus, he would hesitate to adopt that course. His reluctance is strengthened by a recent experience of rather an annoying nature. A young woman, mother of two children, was curetted by him last September for a uterine discharge evidently due to endometritis. The curettage was not unusually vigorous, nor was it followed by the application to the endometrium of any caustic agent. There was no reaction following the operation, and the patient was kept in bed for a week merely as a precautionary measure. The menstrual flow, which before had been regular though scanty, has since then not reappeared, but the patient suffers every four weeks from severe abdominal pain lasting for seven or eight days. Prior to that the menses had been entirely painless.

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¹ What is interesting to note in these cases is that the menstrual molimina almost invariably increase in severity and recur more frequently with the lapse of time after puberty.

REMARKS ON PRIMITIVE AMENORRHEA,
WITH REPORT OF CASE AND PRESENTATION OF PATHOLOGICAL
SPECIMEN.¹

BY

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THE essential fact in the sexual life of woman is the predominating control of ovarian influence, and the central fact in the pathology of woman's sexual life is due in large degree to changes or perversion of function or structure of the ovary.

While ovarian function is not the single influence which sways woman's existence, the absence of it would dethrone her womanhood. About these physiologic and pathologic phenomena cluster influences which dominate and control woman's sexual life, presenting problems of broad and far-reaching influence. The changes, physical and psychical, which mark the advent of puberty, are among the most important in woman's life, and variations from their normal development are entitled to and demand the most careful consideration. But one or two features of this phenomenon will find place for discussion in this paper.

The commonly accepted theory concerning the functional activity of woman's sexual life is that menstruation marks the commencement of ovulation and that in its ordinary manifestation they are, in point of time, coincident. The experience of all observers doubtless furnishes exceptions to the common law, but these exceptions serve rather to confirm than abrogate it.

Among these variations or absence of physiologic processes, amenorrhea in some of its forms is of common frequency. An intelligent and comprehensive distinction in amenorrhea embraces a difference between those cases which are congenital or acquired.

In the former, *emansio mensium* or primitive amenorrhea, the causes are congenital and chiefly physical, while in the

¹ Read before the American Association of Obstetricians and Gynecologists, Pittsburg, Pa., September 20 to 23, 1898.

latter, *suppressio mensium* or acquired amenorrhea, the causes are functional, or largely so, excepting perhaps those the results of inflammation. In the first class menstruation has never been present; in the second class the function once present is arrested.

There is reason to believe that in most cases of primitive amenorrhea, except in retention of menstrual blood, ovulation is lacking; but in the case I have to report ovulation without menstruation was the interesting feature present.

Primitive amenorrhea may result from congenital deficiency or imperfect development, as follows: absence or imperfect development of ovaries and uterus; degeneration of the ovaries, cystic or otherwise; and the formation and development of benign or malignant tumors of the ovaries sufficient to preclude or abolish their function. One other cause should be included in the list as a causative factor in primitive amenorrhea—namely, occlusion of uterus and vagina preventing escape of menstrual blood from either the uterus or vagina.

It will be seen that the causes of primitive amenorrhea are not primarily functional, but organic, while, on the other hand, acquired or functional amenorrhea is due to faulty condition of the blood or an abnormal state of the ganglionic nervous system.

It therefore makes careful scrutiny on the part of the physician obligatory and imperative, particularly in the patient arriving at the age of puberty, when menstruation does not appear, to differentiate as to the cause. It is therefore at once apparent how great the responsibility of making rational and logical differentiation as to those complex factors operating to fit the girl for womanhood and healthy reproduction. The longer menstruation is delayed the more emphatic becomes the reason for ascertaining the cause. It is not my purpose to enter into discussion in enumerating the methods for the study of an individual case, but suffice it to say that intelligent management demands the resort to all methods of interrogation, including careful physical examination in cases where the flow has not appeared after the common evidences of puberty have established themselves not only, but in the absence of such phenomena.

One of the frequent causes of primitive amenorrhea is occlusion of the *os uteri* or an imperforate hymen, resulting in retention of menstrual blood. In these cases evacuation of the retained menstrual fluid under strict aseptic and antiseptic precautions is the one rational course to be pursued, with the

patient in bed, care being exercised to permanently overcome the obstructive cause. Careful physical examination, with or without an anesthetic, will go far to clear up doubt as to absence of uterus or ovaries, or disease of either sufficient to abolish their normal functional activity. If absence of either the uterus or ovaries can be demonstrated the case is ended. If benign or malignant disease of these organs is responsible for the amenorrhea, then deliberate and conservative judgment will determine the course to be pursued. If it can be demonstrated that the physical causes are responsible for lack of ovulation or menstruation, or both, the remedy will be more often applied toward conserving the life and promoting the health of the individual than any hope or expectation of bringing on the function, except in cases of ovarian growths when surgical aid may be availing.

The abnormalities of ovulation or menstrual flow, or both, present a variety of interesting phenomena. There are women who have conceived and borne children, yet have never menstruated, and others who never menstruate save during pregnancy. This simply demonstrates the extremes of irregularity as governed by the common law of physiologic development and function.

The change or absence of menstruation, as witnessed after the removal of the ovaries, is one of the highest interest from the physiologic and pathologic standpoint. The shock to the sympathetic nervous system, and the consequent discomfort of the patient by artificial and sudden development of the menopause, is a matter of no small consequence and only justifiable as a choice of evils. It is in this light that the comparative study of the results following artificial menopause, and primitive amenorrhea from organic changes in or absence of the ovary, is of so much interest, though it is apparent that opportunities for such comparisons are of infrequent occurrence.

The case I have to report came under my observation last fall, having been sent me by Dr. Samuel Hendrickson, of Jamaica. Mrs. B., age 24, a woman of refinement and fine physical development, had been married about two years, was sterile, and had never menstruated. She gave an intelligent history of having had all the symptoms which usually accompany menstruation, since the age of puberty, except the appearance of the menstrual flow, commencing at about 18 years. The symptoms of discomfort developed with perfect regularity every twenty-eight days, with a history of increas-

ing pain and nervous excitability, until during the eighteen months previous to my having seen her the pain had become unbearable and nervous perturbation such that she and her friends feared insanity. The one subjective symptom which gave rise to her fears of mental disturbance was severe headache and pressure felt at the vertex, which was present for several days at each menstrual molimen. During a year or more she had become conscious of a gradual enlargement of the abdomen, and could herself easily define an abdominal tumor. This growth was easily discoverable to touch and sight, and the rational indications pointed to a distended uterus the result of retained menstrual blood. The woman's abdomen was fat and thick, but the tumor could be well defined, seeming as large as a uterus at the fifth month of pregnancy. The uterus was pushed up under the pubes by the tumor, and admitted a sound to the usual depth of two and one-half inches, thus disproving the theory of retained menstrual blood in the uterus.

She entered my service at the Bushwick Hospital, and a careful study was made of the case by the consulting gynecologist and myself. We were not positive as to the exact nature of the tumor, but from its location and behavior it seemed likely to be a subperitoneal fibroid, as moving the growth moved the uterus. The patient was desirous of an operation, saying she would rather die than longer suffer, fearing she would become insane. The history of her case revealed no evidence of ever having suffered from peritonitis, which is mentioned simply to show how misleading such statements are.

On opening the abdomen dense and extensive adhesions had almost walled off the pelvic contents. I found and removed the two tumors, which I herewith present with the report on specimens by Dr. Henry P. De Forest, pathologist to the Seney Hospital:

The specimens presented for examination and description consist of two tumors removed from the abdominal cavity of a young woman, 24 years of age, who had never menstruated.

The first and smaller of the two is of a flattened oval outline, its major diameters being 11, 9, and 7 centimetres respectively. It is composed of a thin-walled sac, which is subdivided by septa into a number of larger and smaller cavities. These cavities contained a thickened, grumous, and viscid material, in some instances clear and of a chocolate color; in others, including the two largest cavities, this material had become

infected and was changed to a thick and brownish or grayish pus.

A smaller tumor, 2.5 centimetres long, lies flattened upon the outer wall of the larger sac. This on section proves to be the remains of the ovary and contains a corpus luteum spurium.

The oviduct is not found.

We have here, therefore, a true *multilocular cystoma* with septic infection of the larger portion of its contents.

The second specimen is a tumor of approximately the same shape as the one already mentioned, but of much larger dimensions (19x15x14 centimetres). This, when distended, was therefore of about the size of a child's head. This, too, is a thin-walled sac, but its contents are composed of a great variety of elements. A large mass of fluid of a brownish and purulent consistence holds in emulsion a quantity of sebaceous material interspersed with short and curly hair. There is but one cavity, and on the inner walls of this are smooth areas covered with epithelium and with a few scattered hairs growing from them. The general surface of this inner wall is smooth, but within the wall are a number of large plates of bone, some of them nearly five millimetres thick and so firm that they can with difficulty be broken. No teeth are found.

No remains of ovarian tissue can be discovered, and the Fallopian tube is also indeterminate.

This tumor, therefore, is one of the teratomata—an ovarian dermoid which, in addition to its original structure, has become the site of inflammatory complications.

The dermoid had no pedicle, but was closely adherent to the uterus and right broad ligament. It was already necrotic, having undergone inflammatory changes, and was liable to have ruptured spontaneously. This dermoid found its seat in the right ovary and had dislodged and supplanted the ovarian structure.

The second tumor was a suppurating multilocular cyst of the left ovary, and not apparently, as supposed, a tubo-ovarian abscess.

The cause of the primitive amenorrhea was plainly of organic origin. One interesting fact in this connection should be mentioned—namely, that neither tube could be found, showing either that they were congenitally absent or had disappeared in the advance of the organic disease.

The report of the pathologist is both interesting and instructive, and harmonizes with the theory of the case both from a physiologic and pathologic standpoint.

1. That the dermoid had usurped the place and destroyed the function of the right ovary.

2. In one of the cyst walls of the multilocular ovarian cyst

was found a shrunken ovary the size of a large lima bean, and within this ovarian stroma was found a corpus luteum spurium. To the presence of this ovarian stroma was due the womanly development, with ovulation and the futile effort of menstruation and its consequent suffering.

3. It demonstrates the possibility of ovulation without menstruation.

4. It leaves us in doubt whether the absence of the Fallopian tubes was primary or secondary to the grave disease of the ovaries, with the possibility that they were congenitally absent.

5. It presents the rare and exceptional condition of a perfectly developed woman who had an ovary and uterus, who ovulated, was sterile, and never menstruated, and yet was ruined in health by Nature's effort to establish an impossible normal function.

Two years ago I had the pleasure of presenting to this Society a dermoid tumor of the ovary belonging to the group of teratomata, which is of rather rare occurrence, and in the larger of the specimens is another of the same class.

263 HANCOCK STREET.

OPERATIVE TECHNIQUE FOR THE INTRALIGAMENTOUS OVARIAN CYSTOMA.¹

BY

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THE distinguishing characteristics of the intraligamentous ovarian cyst are the absence of a pedicle, the encapsulation of the growth, and its proximity or intimate relation to important pelvic structures, such as the ureters, rectum, bladder, and large pelvic vessels. Prior to the enucleation method as devised and advocated by Miner in 1869, the surgical treatment of these cases was crude and incomplete. Barring the few cases in which a pedicle could be found or formed, radical removal of the cyst was unthought of. The most that was attempted was to establish a permanent drainage by fastening

¹ Read before the American Association of Obstetricians and Gynecologists, at Pittsburg, Pa., September 20, 1898.

the cyst wall into the abdominal opening, in the hope that the cyst would shrivel and disappear. More frequently than otherwise it refilled, or the patient succumbed to suppuration or sepsis. Of cures there were few. Miner's method marked a new epoch in the operative technique of the intraligamentous cyst, and will ever remain the foundation principle of its surgical treatment. Still, the operation was attended with so much difficulty and danger as to stay the hand of the timid and disturb the equanimity of the boldest surgeon. Chief among the dangers incident to the operation was that of hemorrhage. In many cases this was frightful from the start and continued with increasing severity until the enucleation was completed or until the woman's life went out. Then, again, the difficulties attending the dissection were at times almost insuperable. Sometimes the capsule was torn into shreds; sometimes the operator lost his bearings and wandered off into a maze of blood-sodden and unrecognizable tissues; sometimes he would awake to the fact that he had injured the rectum, had torn or cut across the uterus, or would be horrified to learn that he had destroyed a ureter or had opened into a trunk vessel at the bottom of the pelvis. Meanwhile, with forceps and ligature, he was busily engaged in securing bleeding vessels, only to open into the same vessels time and again as he worked his way downward from plane to plane. Such an experience is frightful and well calculated to check the ardor of the most enthusiastic surgeon. In the elegant and expressive phraseology of Goodell: "These are the cases that die on the table." Speaking on the same subject, Tait says: "It is by no means easy of performance and always gives rise to troublesome hemorrhage. I have three times employed this method, but am bound to say that without a good deal of experience in the separation of adhesions I would have stopped in the middle of the process and left it incomplete on account of its difficulties." But to this distinguished body of representative gynecologists, every one of whom has had personal, and I dare say painful, experience along the same line, it is not necessary to adduce evidence of this sort. Aside from the hemorrhage, most of the dangers incident to the operation come from our inability to distinguish one part from another in the midst of a hurried and bloody dissection, owing to the effacement of landmarks and the disturbance of normal anatomic relations. It would be unfair to assert that all intraligamentous cysts are of the type just described, for, as we all

know, there are some the removal of which is attended with neither difficulty nor danger. Still, there was a crying need for something better. The ashes of the immolated dead demanded it; the unfortunate and expectant living demanded it; and the surgeon demanded it, for he was sick and tired of playing the leading rôle in this red-handed drama. That technique has come. It came in the simplest, easiest manner imaginable. It came as a logical sequence to that which was already familiar to every surgeon; it came as almost every other discovery in natural science and many of the most important advances in surgery have come—through the application of well known principles to new conditions. Ever since the days of Ambrose Paré surgeons have been tying trunk vessels to control hemorrhage from distal branches. Notwithstanding this fact, so well established and universally recognized, many years of ingenious but futile effort were spent in devising some method for controlling the hemorrhage from the dropped pedicle of an amputated uterus. At length a voice at our ear said: "Tie the uterine arteries." The suggestion was so simple, so absurdly natural, so redolent of antiquity, that our first impression was not so much that of admiration for the discovery as of disgust for our own stupidity. We exclaim: "Great is Baer of Philadelphia." It did not strike us as anything new; it never does. It was simply the application of old and well-known principles to new conditions, and yet this does not detract in the least from the value of the discovery nor abate our admiration for the author of it. In our eager quest for means and methods we are too prone to move with nose in air, crossing paths that we should follow. I shall now, in as few words as possible, endeavor to trace the process of evolution of the operative technique for the intraligamentous ovarian cyst.

The Ideal Technique Foreshadowed.—On the 30th day of October, 1894, I was called upon to operate for an abdominal tumor at Camp Chase, O. The patient, Mrs. C., was a Quaker lady 55 years of age. There were present Dr. Stewart (the family physician), Dr. E. M. Gilliam, and Dr. Guy Meeks as assistants, besides a trained nurse. On entering the abdomen I found myself confronted with an intraligamentous ovarian cyst of more than ordinary size, but presenting several peculiar features. After tapping the cyst I found that the capsule or ligament was much hypertrophied and corrugated. I found also that beneath and to the uterine side of the growth was a

broad, short pedicle. I placed a long hysterectomy clamp on the pedicle, and, instead of entering the capsule from above and working downward as usual, I transfixed it low down in front, introduced a finger and separated the adhesions at the bottom, and, turning the finger upward, tunnelled toward the marginal attachment, slitting the capsule as I went. Returning to the bottom of the cyst, I freed the entire anterior surface and then rolled the cyst out from below upward, stripping it off of the posterior leaf of the ligament. The ease and facility with which this was accomplished was a revelation. After removing the cyst a chain ligature was placed on the pedicle and the redundant portion of the capsule excised. In this operation were embraced all the essentials of an ideal technique:

1. Tapping reduced the volume of the tumor and allowed me to apply the clamps.
2. The application of the clamps completely controlled the hemorrhage and made the operation bloodless.
3. By following the line of cleavage rapid and easy enucleation was accomplished.

These were the lessons that were taught, but, to my shame be it said, I failed to grasp their full import. The tapping was done as a routine and in consonance with universal practice. The clamps were applied because I found a pedicle, and it never occurred to me that they could be made useful under any other circumstances. Over the discovery of the line of cleavage I was much elated, and in reporting the case to the Columbus Academy of Medicine shortly thereafter I dwelt on this feature at considerable length. Nevertheless I was neglectful and did not for some time afterward turn this knowledge to account by including it in my technique. In the spring of 1896 Kelly gave to the world his method of hysterectomy by continuous section from one side of the pelvis to the other. In his admirable paper much emphasis is given to the fact that intraligamentous fibroids are enucleated with vastly greater ease and safety from below upward than by the reverse method then so generally in vogue. This again taught the lesson of a line of cleavage and in no uncertain manner pointed out its trend. But as this applied to intraligamentous fibroids it never occurred to any one to apply it to any other purpose.

Hall's Method with Hysterectomy.—In the autumn of 1897, while on a visit to Dr. Rufus B. Hall, of Cincinnati, O., he demonstrated to me his method, recently devised, of dealing

with the intraligamentous cyst. I quote from his paper, which I would be glad to reproduce in full did time permit: "First tap the cyst and empty it; ligate the ovarian artery on the tumor side at the pelvic border; ligate the ovarian artery on the opposite side outside the healthy ovary; divide the broad ligament; divide the peritoneum above the top of the bladder and push the bladder down; ligate the uterine artery on the healthy side; cut across the cervix and clamp, or ligate the uterine artery on the tumor side. The capsule of the tumor can now be divided above the top of the bladder and at a suitable point behind, and the tumor enucleated from below upward." To Hall is due the credit of having been the first to apprehend all the factors that go to make up the ideal technique for the intraligamentous ovarian cyst. It came to him as he stood, scalpel in hand, in the presence of impending disaster. It came as an inspiration—an instinct—such as comes only to the true surgeon in times of need. There is, however, one feature of Hall's method that I could wish to eliminate, or at least to limit to appropriate cases, and that is the extirpation of the uterus. In women who have passed the climacteric, or in others who from any cause are incapable of childbearing, this objection can scarcely be urged; but for the young and strong and fruitful the loss of the uterus is little less than calamitous. With this pertinent fact before me, and profiting by my earlier experience and that of Hall, I evolved the following technique, which, it will be observed, differs little from that of my first reported case alluded to above.

The Author's Method without Hysterectomy.—First tap the cyst and drain off its contents, then ligate the ovarian artery near the pelvic wall and place a clamp between the cyst wall and the uterus. Select a point as low down on the anterior surface as practicable, and with a pair of forceps lift up the capsule and make a small opening. Now turn the finger upward and work in the direction of least resistance. This will indicate the line of cleavage, and will generally, as I believe, run diagonally across the face of the tumor upward and outward. Split up the capsule along the line of dissection. Now introduce the hand and strip off the capsule from below upward, following the line of cleavage. Should the opening not be extensive enough to admit of the easy delivery of the cyst, it may now be enlarged by an incision parallel to the capsular margin. Seize the cyst and roll it out of its bed, stripping it from the posterior capsular wall. Here, as elsewhere

in breaking up adhesions, the sponge will be found of great service and at times indispensable. Redundant tissues are now trimmed away, a ligature is substituted for the clamp on the uterine side, and the opening in the capsule closed by a running catgut suture. My experience with this technique is confined to one case, in which it served admirably. Feeling some misgivings for the ureter in the preliminary diagonal incision, in more recent cases I have reverted to the old method of making this incision parallel to the capsular margin and making a pocket in front and then rolling out the cyst as described above.

There are cases in which the cyst overlaps the uterus, and in which it would be impossible to apply the clamps to the ovarian artery at its uterine extremity. In such, after securing the ovarian artery on the proximal side, make a small opening down to the cyst wall where it overlaps the uterus, and, introducing a finger, break up the adhesions. Now enlarge the opening where the trocar was introduced, insert the hand, and, while the finger on the outside depresses the cyst wall, seize it from within and make traction until it has cleared the side of the uterus and gives opportunity for the adjustment of the clamp. If the cyst should be loosely attached, advantage may be taken of this leverage and the cyst delivered by inversion, assisted, if need be, by the finger or the half-hand on the outside. Other simple and loosely attached cysts may be treated in the same way, except that the preliminary dissection should be at a point deeper in the pelvis. I have never had a case of this kind. In papillomatous cystoma and in dermoid cysts it would be better, if not too large, not to tap and never to introduce the hand for fear of infection. Should a case present in which this operation is found impracticable or inexpedient, resort should be had to the Hall method. But after all, and when all has been said and done, there will be cases which, owing to the density of adhesions or other causes, will end in failure or disaster. In conclusion I desire to make a few remarks on the vascular supply of the intraligamentous cyst and the line of cleavage.

The Vascular Supply.—This is a subject that demands elucidation at the hands of the anatomist. If we could satisfy ourselves on that score the technique could be placed on a substantial and unvarying basis. In the absence of positive anatomical knowledge we are justified in the use of inductive reasoning. Hall's experience taught us that by tying the

uterine artery at the cervix and the ovarian artery at the pelvic brim the blood supply of the cyst was entirely shut off. This would indicate that if the uterine artery sends *any* branches to the cyst or capsule, it does so as it cruises along the side of the uterus. It would be perfectly safe, then, to secure the uterine artery at the cervix and the ovarian artery at the pelvic wall on the affected side. Acting on the supposition that the vascular supply of the normal ovary continues to be that of the cyst, I have contented myself with securing the ovarian artery and its branches. If, as we have recently been told, the ovary and adjacent structures receive their blood from *recurrent* branches of the ovarian artery, which in part receives its blood from the uterine by anastomosis, it will be readily understood why a clamp on the uterine extremity is so indispensable. In the few cases which I have had since adopting this method the hemorrhage has been under absolute control; hence I conclude that the cyst and its environments are supplied exclusively by the ovarian vessels. Whether the ovarian artery and its branches are carried before the cyst in its downward growth and feed the cyst from below, or whether they are crowded to the uterine wall and feed the cyst from the side, are questions of pertinent interest. The consensus of opinion seems to be that the cyst is fed from its lower and inner aspect.

The Line of Cleavage.—In all dissection there is a right way and a wrong way. If one were to attempt to follow up a blood vessel and its ramifications he would commence at the stem and work outward. A reverse course would be utterly impracticable. In following the course of a laminated structure the same rule applies. If you go with the grain your task is easy and you are led along, not so much by your anatomical knowledge as by the facility with which the tissues part right and left along the line of cleavage. Now reverse the order and attempt to go against the grain. You find yourself wandering into nooks and crannies, getting between layers that should have been avoided and bringing up in blind passages. It will generally be found that the line of cleavage is coincident with the trend of the vessels. An ivy vine clinging to a wall affords a very apt illustration of the line of cleavage as applied to blood vessels. Here, as in the blood vessel, we have the main stem, the seried branches, and the tendrils which bury themselves in the mortar just as the nutrient vessels enter the cyst. If we wish to detach the ivy we cut off the stem and strip it upward.

The cleavage runs along the stem, then the primary and secondary branches, and so on until it extends to the uttermost extremity of the most delicate shoot, and the vine comes away intact. Supposing now that this were in fact a blood vessel and the circulation has not been shut off and you attempt to follow it from branch to stem. You would not only meet with difficulties in dissection, but would be continually breaking into vessels, and the field would be inundated with blood from innumerable mouths. If you stop to secure them you lose valuable time, and in the next move open into the same vessels of larger calibre, and so on to the end. Supposing, on the other hand, you attempt to follow from stem to branch. If by any chance you wound a vessel all the distal branches of that vessel are cut off and cease to give concern. Few ligatures are required, dissection is swift and easy, blood and table time are saved the patient, and you are saved the wear and tear of a trying ordeal. Let us hope that the lesson herein inculcated may not be lost—the lesson of applying pertinent principles to further research—and that with the letters in hand we may yet be able to spell out other words than those for which they have been utilized.

50 NORTH FOURTH STREET.

EMMET'S OPERATION FOR LACERATED PERINEUM AND RELAXED VAGINAL OUTLET.¹

BY

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THE writer wishes to speak of Emmet's operation because he has found it to answer all the requirements of restorative and conservative treatment of perineal injuries. That in proper hands it is serviceable and all-sufficient to overcome any of the perineal injuries resulting from childbirth can no longer be open to question. That it is generally misunderstood and its technique rather difficult to learn is equally true, if we can believe the generally expressed opinion. But the writer believes that his favorable opinion of the operation is shared by the medical profession in general, and does not need to make further allusion to its desirability.

¹ Read before the Washington Obstetrical and Gynecological Society.

A word may be said as to the many variations from the technique of Emmet. If one assumes to perform the operation exactly as done by its eminent author, he is indeed claiming more than the average gynecologist may modestly dare to assert. Therefore the writer must only claim to have studied and adopted some of the principal features of the operation first described and perfected by the gentleman whose name it bears. It would appear that this is necessary. It is almost impossible to obtain good results without comprehending the rules laid down for its performance, as well as to learn all one can of the muscles and fascia concerned. One may never hope to understand Emmet's operation from any diagram found in text books. It is almost impossible to do so, even were it necessary. It is not necessary to attempt such an undertaking, for, even after watching Emmet perform his work, scores of men have failed to grasp either the underlying principles or its *modus operandi*. The writer has nothing new to offer, but wishes to present an earnest plea for its frequent performance to the exclusion of other and less satisfactory procedures. He would urge a more earnest effort to study and practise a measure which is so important and so prolific of good results to suffering womanhood.

No operator can well afford to adhere for form's sake to the stereotyped practice of another man. Hence in many ways we differ from the methods laid down as classical by Emmet and those who follow in minute detail his beautiful technique. After admitting all that Emmet has said about the office of the pelvic fascia, and the levator ani and sphincter ani muscles, let us see how far it is possible to avail ourselves of his teachings and yet differ in some respects from him as to details. One of the most important features of the Emmet operation is the elevation of the floor of the pelvis. The insertion of the sutures as directed by Emmet brings this about. The rectocele is not, as some say who utterly fail to grasp the intention of the operation, drawn downward and toward the vaginal outlet. But, on the contrary, the sutures, if properly placed, elevate the floor of the pelvis toward the crest of the rectocele, or rather toward the posterior surface of the symphysis pubis. Another important feature of this operation is the restoration of over-stretched fascia and muscles. As may be seen in nearly all of our cases, there is usually a double sulcus in the vagina, or one on either side of the rectocele.

The weak, over-stretched fascia is exposed by denuding high up toward the cervix on either side, making the "prongs of

the Y." We speak of this as one of the "important features" because no other operation can approach the Emmet in this particular. We must "take in the slack," and the operator must learn to do this so that the patient may have sufficient support, while if he denude too extensively the sutures will surely cut out and the result will be a failure. It can easily be seen that the most important support given the uterus and pelvic organs should be that nearest the uterus itself. Obviously, if the "so-called perineum" at its lower portion only is ever so well repaired, the uterus must have very little, if any, support from that alone.

We are fully convinced that a proper support to the uterus from the pelvic fascia immediately under the cervix helps to maintain a correct position of the uterus in normal anteversion. But we do not claim that this support in any great measure assists the broad ligaments in their office of holding the uterus upward. The utero-sacral ligaments are relieved of their tension and thus may not become elongated, which must occur in retroversion and descent of the uterus.

Not only may we rely upon this operation for elevating and restoring the pelvic floor, but we also find it possible to restore the torn muscles. The levator muscle is rarely seen, its fibres being generally overlooked; but the sphincter muscle can always be located, drawn out, and securely sutured. Just here we wish to do credit to the Tait operation, for its best office is in restoring a torn sphincter. This, however, does not prevent us from obtaining as good results from the operation under discussion, for we obtain uniformly good results in either case. The sutures in the Emmet do all that can be claimed for the Tait operation, besides the greater usefulness of the former in restoring the pelvic fascia to something like its previously normal position. The chief reason why most operators depart from the careful technique of Emmet is because his operation requires more time than seems necessary. As a patient may have to have two, three, or more operations performed at the same sitting, we naturally wish to shorten the time of each one. Hence, while Emmet is repairing an over-stretched vagina and perineum, other operators curette the uterus, perform trachelorrhaphy and perineorrhaphy, remove hemorrhoids, and even open the abdomen and perform one of the many operations upon the intra-abdominal organs. The application of silver wire necessitates much time in application, and it is, moreover, difficult to remove, although we will not for a moment doubt its desirability in other respects. We

have tried silkworm gut, silk of various colors, and catgut, giving our preference to the latter material for nearly all of the work. But we still hold fast to the silkworm gut or wire for the crown suture and those which are used to hold the contracted but ever-moving fibres of the sphincter ani muscle. Briefly we mention our method, which somewhat differs from that described in the text books and which we have several times seen used by Emmet. His use of tenacula is beautiful, not to say scientifically skilful. But for more than one reason we find it easier not to use tenacula. One reason is that these require better assistance than we usually find available in hospital work. We therefore use fewer instruments and those requiring less skill in handling. A pair or two of spring dissecting forceps with teeth (not serrations), a pair of scissors curved to the left, a scalpel, needle-holder, needles, and suture materials constitute the instrumental outfit which we think essential for satisfactory work of this kind. A few small clamp forceps may be added to hold the sutures until cut short.

The crest of the rectocele is caught with forceps and a silk suture placed through it, leaving a long loop which is used to draw upon or turn the parts as desired to facilitate denudation. Emmet gives specific directions for the selection of this point, measuring it by the location of the meatus urinarius. The assistant places his left hand so as to press the left labium majus outward and to the left, while with his right he holds the long loop suture so as to draw the rectocele to the opposite side. With the spring forceps the operator now catches up a point as far into the vagina as he thinks repair is needed, selecting the bottom of the sulcus he first proposes to denude. With a scalpel he draws a line between this point and the carunculæ myrtiformes on the left side, and then from the forceps to the long suture in the rectocele, making a distinct incision which may be easily seen. This V-shaped space is now quickly denuded with the scissors, and extends into the vagina from two to two and one-half inches. The same method is now applied to the right side and the space between the suture previously mentioned and the two carunculæ and fourchette, if the sphincter has not been completely torn through. A few bleeding points may be caught with clamps, although many surgeons, including the author of the operation, do not check the loss of blood. The first suture is applied at the highest point of denudation on the left side, selecting, as very wisely recommended by Emmet, a portion of firm vaginal wall back of the caruncle and one-eighth of an inch from the denuded

portion. The point of the needle is passed under the denuded strip downward and forward to the bottom of the sulcus, and brought out, reinserted, and passed in and upward, reversing its direction and coming out on the tongue of undenuded vaginal floor about half-way of its length.

Each suture should be placed parallel and in the same manner about one-quarter of an inch between, in order that when tied the entire pelvic floor is elevated as above mentioned. Emmet places all the wire sutures in the vagina before tying any of them. But those who use catgut or other material think we get quite as good results by tying up one suture after another as they are placed. The application of the crown suture is difficult to describe unless with the patient present and during an operation. It is inserted in such a manner as to assist the other sutures in elevating the perineum with the anus itself toward the meatus urinarius. The needle is introduced a little below the caruncle on the left side and brought out on the vaginal surface one-half to three-quarters of an inch posterior to the caruncle, through the side of the undenuded vagina, then across under the tip or tongue of undenuded rectocele, there returning on the right exactly the reverse of the introduction on the left. The introduction of the additional sutures is easy, and they are usually of silkworm gut material. Two additional sutures are usually required and are placed just below the crown suture, although they do not appear on the vaginal surface, being placed as deeply as possible under the denuded surface, yet carefully avoiding a puncture of the mucous lining of the rectum. For one the writer does not follow Emmet here and can see no reason for inserting the fingers in the rectum. If the sphincter ani is torn the greatest care must be taken to expose its fibres and to bring them into contact, if we would obtain thorough union when it has been completely severed. Some prefer to complete the operation in two sittings. But it is generally possible to obtain a fairly good union by combining the operation of anal restoration with that of the pelvic floor, thus saving time, expense, and some suffering and inconvenience on the part of the patient. As Emmet has clearly pointed out, failure to obtain union of the sphincter is due to faulty application of the sutures; they are usually placed so that the denuded and exposed fibres are not juxtaposed, or else they are placed too far forward and do not include the fibres of the muscle.

VAGINISMUS.¹

BY

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IN these days of pelvic pus, fibroid tumors, and operative gynecology, the subject of vaginismus does not occupy the minds of the profession to any great extent, unless it may be the individual who is so unfortunate as to have a case under his care. The special features of vaginismus are pain and spasm, and are produced usually by something that interferes with the external genitals, as attempts at sexual intercourse or examinations by the surgeon. The cases that we see the most of are in young women just after marriage, because the unanticipated marriage relations have become intolerable, and the happiness of the pair demands urgently that something be done, and she is led to overcome her scruples and seek an examination. Sometimes the surgeon may meet with a case that has extended over a period of years of married life without any effort having been made to obtain relief, either because of fear, modesty, or, as they express it, they have ceased to be bothered by their husbands. There have been some cases of vaginismus reported occurring in the unmarried, who come under our observation owing to some derangement of the sexual organs. An attempt to make a vaginal examination in these cases gives rise to the most intense excitement with spasmodic movements of the muscular system and even general convulsions. The entrance to the vagina is so closed by the contraction of the muscles that it is almost impossible to introduce the examining finger.

Pozzi speaks of it as a hyperesthesia and mentions three kinds. Garrigues says "vaginismus consists in a painful tetanic contraction of one or more muscles surrounding the vagina." He divides the character of the spasm into superficial and deep, the superficial having its seat at the entrance of the vagina in the bulbo-cavernosus muscle, and the deep in the levator ani. While it may be that these are the muscles primarily affected, certainly more muscles are involved in the

¹ Read before the Washington Obstetrical and Gynecological Society.

spasm, for the contraction almost rolls the patient off the table in the involuntary effort to escape the offending suspected or real touch. The sphincter of the vagina and anus and the levator ani muscle contract violently, and, according to the pain produced or the dread of the patient, there is contraction of the thighs, abdominal muscles, and even of the trunk and limbs, producing a general spasm.

The hyperesthetic spot is usually at the hymen or its remains. Nearly all authorities agree that there is some local disease, as inflamed hymen, irritable carunculæ myrtiformes, fissure of the fourchette or vaginal entrance, fissure of the neck of the bladder or anus, vulvitis, vaginitis, endometritis, displacement of the uterus, or pelvic inflammation; or, on the part of the male, an unusually large penis or awkwardness in the sexual act which produces fear in the female. The patients are usually of a nervous, hysterical type.

Sims says it is due to a neuromatous condition in the remains of the hymen, though Alonzo Clark could find no enlarged nerve filaments running through them. Lawson Tait says it is due to fright or disease of the vestibule, while Sims says again that the most perfect cases he had seen were uncomplicated with any inflammation, but usually there is a redness about the fourchette, the hymen thick, and if the finger is forced through it feels a resistant as a band of fine cord or wire. According to Emmet, vaginismus is purely a symptom denoting reflex irritation, the chief expression being an exaggerated sensitiveness about the hymen and vaginal outlet. As the irritation is transmitted through the sympathetic nerve, the effect is expressed at its terminal branches in the erectile tissue distributed about the vagina. It is found only in anemic and exceedingly nervous women and in those who have overtaxed their nervous system, and in those peculiarly liable to neuralgia, of which vaginismus is a kindred ailment. He says it is the exception to find any local exciting cause; occasionally there may be cicatricial tissue about the perineum or local inflammation about the vagina, vulva, or vesical neck.

The "American Text Book of Gynecology" speaks of vulvovaginal hyperesthesia and vaginismus, and says the causes of both affections are similar, but small spots of erosion about the vaginal entrance or a diseased condition of the hymen or its remains are more frequently found in vaginismus. Frequently no cause whatever can be discovered.

Palmer, in Keating and Coe's work, says it is not a disease

per se, but a symptom of various morbid conditions of the vulva, vagina, and the surrounding parts. Hewitt says it is a local alteration or irritation of the nerves at the spot itself, but also points out that the condition is a hyperesthesia of the parts, dependent not always on the same cause. Scanzoni thinks it frequently accompanies anteversions, retroversions, or actual changes in the uterus. Sir James Simpson in some instances found two small nodular neuromata under the mucous membrane. Thomas More Madden thinks it is apt to occur in those of hysterical temperament. In some cases he says there is an abnormal condition of the pudic nerve, one branch of which runs to the clitoris and the other is distributed to the perineum and labium, in which its terminal branches ramify freely. There is a case reported in the *St. Louis Courier of Medicine*, 1885, called mental vaginismus. The patient had been married for twenty-five years, the hymen was intact, and there was no lesion. The patient had an abject terror to the sexual approach and was thrown into the most violent spasm.

Whatever may be the direct cause, the nervous system is usually at fault, and when this is so the symptoms seem very much exaggerated as compared with the local disease. In this particular it resembles fissure of the anus. A certain injury to one woman may produce no pain and but little discomfort, and the same injury to another will produce the most varied and severe, out of all proportion to the lesion. So here the lesion seems not sufficient to cause so much suffering. The attempted sexual intercourse may not have produced any appreciable injury, but in the neurotic type of female, and, it may be, even with a keen sexual appetite, as in a case I once saw, there may be some disease or irritability not discovered by the ordinary examination.

Pozzi speaks of three types—hyperesthesia with contraction, hyperesthesia without contraction, and contraction without hyperesthesia.

The causes of vaginismus are the conditions mentioned above, the parts becoming so sensitive that even the slightest touch will produce the phenomena.

The hyperesthesia with contraction usually follows where the nerve change in the hymen or its remains is both sensory and motor. The second form, hyperesthesia without contraction, usually presents some form of disease of the uterus or adnexa, or at least disease above the hymen. So with the lat-

ter type we would expect to find a vaginitis or endometritis, with leucorrhea, disease of the cervix or tubes and ovaries, or some displacement of these latter, and accompanying this some inflammation of the vulvo-vaginal glands. Or a torn hymen may produce the same symptoms. A cause spoken of by some writers is where the vulva is situated very high up under the symphysis pubis, so that when coitus is attempted the glans penis strikes the meatus urinarius and in some cases enters that canal, causing a laceration with a subsequent inflammation. Ulceration may be found about the urethra or in the hymen or in the fossa navicularis. Simple contraction without hyperesthesia is usually found in conjunction with disease of the neighboring organs, as hemorrhoids, fissure of the anus, or adherent prepuce of the clitoris.

The indications to be met in the treatment are the neurotic temperament, the morbid hyperesthesia, and the lesions which are the immediate cause. It is usually best to examine the patient under an anesthetic, after having gone into every detail of history, and determine, if possible, the cause of the trouble. If the cause is found to be a torn and thickened hymen, this should be excised after having well dilated the vagina, or, after the manner of Pozzi, making two incisions into the vagina from the vulva, exposing the sphincter vaginæ and cutting some of its superficial fibres. The mucous membrane is so dissected up and afterward sewed as to enlarge the vulval orifice and evert the mucous membrane, changing the irritable points to a less exposed place. If there seems to be no special disease of the genital organs or any local disease, after a course of general treatment, the vagina may be stretched with glass plugs or a speculum. The general treatment is nearly always beneficial and sometimes it will effect a cure, especially if the cause is not local. If the patient is anemic some form of iron, and, if she will bear it, cod-liver oil, is beneficial. Sumbul and asafetida, as contained in the Goodell pill, with outdoor exercise and some pleasant occupation, have a good effect. If the uterus is retroverted this must be corrected, even if some operation has to be done, as ventral suspension. If the perineum is torn and there is scar tissue about the vulva a perineorrhaphy must be done. A leucorrhea causing an inflammation about the vulva must be cured by a curetting if it is dependent on an endometritis, or by some application to the cervix if this is the offending organ. It may be necessary to incise the vulvo-vaginal glands and apply a germicide to get rid of any infection

here. An ulcer of the rectum or a fissure in ano should be treated as such.

There does not seem to be much success from removal of the ovaries. Pregnancy sometimes effects a cure, though it is usually a preventive to conception. Gallaher reports a case in the *Pittsburg Medical Journal*, 1882, of a patient who, suffering with vaginismus, became pregnant. The hymen was intact at the beginning of labor. The disease returned very shortly after delivery.

Electricity is highly spoken of, especially when the disease is due to disease of the internal genital organs. Gunning, in the *American Gynecological and Obstetrical Journal*, 1895, speaks of some special electrical apparatus which gave him success.

Sims was two and a quarter years in curing his first case, so we may not be discouraged if we do not meet with immediate success. Usually, however, before this time has elapsed the patient has found another physician.

I would like to report the following cases:

Mrs. A., married four years, no children and no miscarriages; extremely nervous. Sought advice because she had never been pregnant. She refused examination each time she came to the office, saying she would be examined the next time. Whenever an examination was proposed she became very much agitated, trembling violently, which ended by weeping. She was at last induced to get on the table, but as soon as the examining finger touched the vulva she brought her thighs so tight together that it was with difficulty I could release my arm. I suspected that the state of affairs was due to the so-called vaginismus, and on questioning her obtained the following history: She had been unable to allow the approach of her husband for several months after marriage, but after six months she submitted from time to time. It always produced the most violent pain and contraction, and a burning sensation that lasted the entire night, so that she was unable to sleep and sometimes spent several hours in a bath of cold water. The husband complained of the same burning sensation, and came from the affray so wounded that it was a long time before he repeated the attempt. I suggested an examination under an anesthetic, which was acceded to with the proviso that whatever was necessary should be done at the time.

The labia majora were rather small and undeveloped, with very little hair on the mons veneris. The vagina [was small

and the uterus of the infantile type. There were some small nodules of hymen remains, which were red and stood out straight from the vagina. The uterus was dilated and the vagina stretched to its utmost limit. The carunculæ myrtiformes were excised and the incision stitched together. The vagina was then packed with iodoform gauze. The husband was present and expressed himself as being pleased at the prospect of recovery of his wife. The patient had a very nervous recovery, but could be examined after the vagina had healed. She said, six months afterward, that the sexual act gave her no pain, but that, though being exceedingly passionate, she had no pleasure because she was always so frightened. She had not become pregnant and was much disappointed. Electricity was suggested, but she did not return.

Mrs. B., married four months. The husband came to me, saying that after the first attempt at sexual intercourse his wife would become so terrified that he had ceased to attempt it. The patient was of the blonde type, 24 years of age, very nervous, and had suffered with her back since her sixteenth year, dating from a fall from a hammock. She was confined to her bed about three months of each year until the last three, when she was somewhat improved. The attempt at examination produced the usual phenomena of vaginismus. The vagina was well cocainized, and the examination showed an intact hymen, generative organs well developed. There were no tender spots along the spine, but the coccyx was so loose that afterward, under an anesthetic, it could be turned out at right angles to the spine, and was so tender that she could not sit except on a circular cushion. The hymen was split and the edges trimmed off. Two months after she became pregnant and was delivered at term of a living child. During the pregnancy she was reduced to such a state of invalidism that I was almost tempted to remove the coccyx and take the risk of abortion. The coccyx was removed six weeks after the delivery. The wound healed nicely, but it was nearly four months before she could sit or walk with any degree of comfort; nor did the vaginismus disappear until this time. She is now entirely well and has a large, well-developed child of 15 months, which she was able to suckle. This case, I think, was caused by the dislocation of the coccyx in a neurotic woman.

Mrs. C., French, dressmaker, 32 years; married; three children, youngest 3 years of age. She began to have pain and spasm during coition about six months before I saw her,

and for the past three months has not been able to endure it. At the time of the first examination the spasm was produced by the slightest touch of the douche nozzle. She was exceedingly nervous and the examination was not at all successful, for she did not seem able to stay on the table. I suggested that she take an anesthetic, to which she objected. I made two other attempts to examine her, but beyond seeing the vulva, which was slightly red, I was unsuccessful. I refused to have anything more to do with her unless she would take an anesthetic, and she passed from under my observation.

The cause in this case I am unable to say, unless it be gonorrhea. The husband admitted having had it, but denied the possibility of having infected his wife.

1312 FIFTEENTH STREET.

SYMPHYSEOTOMY.¹

BY

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I AM convinced that in the operation of symphyseotomy we have a most valuable resource in suitable cases, and that many of its most objectionable features and dangers may be avoided by a proper technique.

I will begin my paper by relating the histories of two cases.

CASE I.—A primipara, white, 26 years old, strong and healthy. Labor began about 10 A.M. November 5, 1895, and at 4 P.M. the pains were strong and regular. I examined her at that time and found little or no dilatation of the os, the head presenting and very high in the pelvis. The pains continued through the night and were unusually strong and regular. At 4 A.M. a pouch of waters had formed and dilated the os pretty well, but there was no descent of the head. I then called in Dr. Ruffin, who anesthetized the patient while I ruptured the membranes and applied forceps. The head was above the superior strait and I could not make it engage. The position was L. O. A., but could be easily changed, as the head was freely movable.

After Dr. Ruffin and myself both had failed even to get the head to engage and had used all justifiable force, we concluded

¹ Read before the Washington Obstetrical and Gynecological Society.

that it was a case for symphyseotomy. The woman was given a hypodermatic of morphia and preparation made for the operation. At 9 A.M., with the assistance of Dr. A. F. A. King, Dr. Sterling Ruffin, and Dr. Rozier Middleton, the operation was done without difficulty. The tissues were completely separated from the under surface of the symphysis close to the bone, so that the finger could be passed completely round the symphysis before the joint was divided. The division was made with a Galbiati knife, and considerable force was necessary, as the rami of the pubes were unusually wide and thick and the joint irregular in shape. The knife could not be made to follow all the irregularities of the joint, and I was obliged to cut through some bony projections on each side. As soon as the bones were divided, though the head had rotated to the R. O. P. position, delivery was easily and quickly accomplished with forceps. the bones separating spontaneously for a distance of two or two and a half inches. The operation was finished and the wound closed in twenty-five minutes. There was no hemorrhage, and the bones were not sutured in any way, but were held in place by a wide strip of adhesive plaster going all round the pelvis. The wound healed without suppuration, but there was an abundant serous discharge from it for several days. This must have amounted to a quart during the second twenty-four hours after the operation, and at first I was alarmed, thinking it must be urine escaping from the bladder. It proved to be only synovial fluid; but I was surprised to find that so small a synovial membrane as that of the symphysis could secrete such a quantity of fluid.

Seven weeks after the operation the mother was able to resume her housework. She is a strong, hearty woman, does her own work, washing and ironing, and does not show the slightest sign of lameness nor complain of any inconvenience from the operation. There was no complaint at any time, except about the adhesive strap, which was kept on for five weeks. The child was born asphyxiated and would probably have died but for the skilful attentions of Dr. King, who took him in charge. He is now a hearty, well-developed boy 26 months old.

Dr. King was of the opinion that the main difficulty in this case was due to the posterior position of the occiput, and was doubtful of the necessity for the operation. I am sure, however, that at the time I was using forceps the occiput was anterior, and Dr. Ruffin will confirm this opinion. I am also sure that when I am unable to make a head engage after a

thorough trial, no matter whether the occiput is anterior or posterior, that head cannot be delivered with the child alive without some cutting operation upon the mother.

The pelvic external measurements, made subsequently by Dr. King and myself, were as follows: Conjugate, $7\frac{1}{2}$ inches; bisiliac, $9\frac{1}{2}$ inches between the crests, $8\frac{1}{2}$ inches between the anterior superior spinous processes. These measurements show only an inch of shortening in the transverse diameter. The bones, however, were unusually thick, the pelvis conforming to the masculine type, and I am satisfied that all the internal diameters are below the normal. The diameters of the child's head, measured a few hours after birth, were all about one-quarter of an inch greater than the normal.

The mother is again pregnant and expects to be confined about the 15th of next August. I have advised her to have the labor brought on at the end of the eighth month, and would like to have the opinion of the Society as to the advisability of doing so. Labor came on spontaneously about the eighth month and a small but healthy child was born after a normal and easy labor.

CASE II.—A white primipara, age 39, a small, delicate woman, was attended in labor by Dr. Warwick Evans. She was in labor about thirty-six hours before there was sufficient dilatation of the os to allow the application of forceps. The dilatation was produced by the bag of waters, the head remaining high in the pelvis. Symptoms of tedious labor became pronounced, and Dr. Middleton was called in to give ether while Dr. Evans applied forceps, finding it necessary even then to make some manual dilatation of the os. Forceps was tried thoroughly by both Drs. Evans and Middleton, but they were unable to make the head engage. The patient took the anesthetic badly and went into an alarming collapse after being under it about an hour. For a time it seemed that she was dying; but she revived somewhat, and I was called in consultation with a view to operative interference.

I saw her first October 28, 1897, about 12 P.M. She was in a very critical condition, pulse 150 and very weak, respiration 40 and shallow, unable to speak above a whisper, and complaining of great pain, though the labor pains were almost abolished. The child's head was above the brim of the pelvis, and I was barely able to reach it with the tip of my finger and was unable to make out the position. The lips of the cervix were much swollen and almost protruding from the vulva. Antero-posterior

diameters of pelvis normal. Transverse, at brim, 3 inches; at outlet, 3 inches. The child was supposed to be alive, as movements had been felt a short time before, but the fetal heart was not audible.

After consultation it was agreed that nothing was to be gained by further trial of forceps or by version and that the choice lay between craniotomy and symphyseotomy. Believing that craniotomy with the head so high in the pelvis and the cervix so swollen would be a tedious and dangerous operation, I advised symphyseotomy as the only hope of saving either mother or child. Leaving the child out of consideration, I believed that symphyseotomy could be accomplished in less time and with less risk from the anesthetic and from shock than craniotomy or any of its modifications. In this opinion Dr. Evans and Dr. Middleton acquiesced, and at 1 o'clock, Dr. Ruffin having been called in to assist, the operation was begun. Dr. Middleton gave the ether very carefully, and to his care and judgment in this particular I believe the patient owes her life.

The operation was done as in the previous case, and in less than ten minutes the bones were divided. They did not separate spontaneously, as in the preceding case, but required some pressure on the crests of the ilium to cause a separation of about two inches. There was no hemorrhage. Delivery was accomplished in about twenty minutes with some difficulty, owing to the position being mento-anterior and the forceps slipping. The child was dead when delivered. A strong silk mattress suture was placed in the tough anterior pubic ligament, and by this means the bones were drawn in close apposition. The wound was closed and dressed, and a wide strip of adhesive plaster applied around the pelvis.

The patient took the ether badly, respiration stopping several times, and at the close of the operation she was in a very critical condition, respirations 40, pulse 160, and very weak. Next morning she was somewhat improved, but still very weak, unable to speak above a whisper, and suffering from a troublesome cough caused by a severe capillary bronchitis. Her respirations were still 40 per minute, pulse 130. This capillary bronchitis continued for six weeks, the respirations varying during that whole period between 32 and 44 and then gradually declining to normal. The temperature ranged from 99° to $102\frac{1}{2}^{\circ}$, and was partly due to the bronchitis and partly to absorption of septic matter from the uterus. I washed out the

uterus on the third or fourth day, removing a considerable quantity of foul-smelling clots and shreds, and this was followed by improvement. It was feared from her symptoms that she had developed acute tuberculosis, and I took a specimen of her sputum to Dr. Carroll for examination. He found no tubercle bacilli, but a very large number of the *diplococcus lanceolatus*.

Meantime there was no suppuration or apparent infection of the wound, and at the end of the eighth day, when I removed the stitches, it appeared to be perfectly healed. The bones, however, were one-half inch apart, and it was impossible to keep them in close apposition, owing apparently to the constant shrinking of the abdomen and muscles around the pelvis and the consequent loosening of the adhesive strip. Plaster casts were tried with no better effect, but the plaster cast was more comfortable and seemed to diminish motion and consequent pain in the sacro-iliac synchondroses.

About the twelfth day a small opening appeared in the scar, through which urine began to discharge, and this opening increased in size until it would admit the tip of my finger. No visible pus came from this sinus, but urine dribbled from it constantly and added much to the difficulty of nursing. I was able to pass a probe into the sinus, between the cut surfaces of the pubic bones, which were separated by a quarter of an inch, and into the urethra until the end appeared at the urinary meatus. The sinus seemed to open into the urethra near the neck of the bladder. I am satisfied that this trouble was produced by the pinching and bruising of the urethra between the ends of the bones, these ends remaining separated most of the time, but knocking together upon movement of the body. The silk ligature in the anterior pubic ligament proved worse than useless and was finally discharged through the sinus. Three weeks after operation the sinus had become quite small and was filling in with healthy granulations. A catheter was then kept in the bladder for five days, during which time the sinus healed completely. The patient complained greatly of pain produced by her cough or by the slightest movement. This pain was referred to the hips as a rule, but occasionally to the wound or to her back and thighs.

At the end of four weeks the bones were still freely movable, and it was not until six weeks after the operation that they became united. Just about this time another complication appeared in the shape of phlegmasia dolens. This, however, also

subsided in about a week. At the end of seven weeks the bones were firmly united, and by the tenth week the patient was walking about her room. She is still weak, and has just recovered from a second attack of capillary bronchitis less severe than the first. She has now no symptom that can be attributed to the operation and is improving in general health and strength every day.

Lusk¹ says of symphyseotomy that "its worst enemies are those who preach its simplicity and who ignore the risks involved in its employment. It is not in all cases easy of accomplishment. The avoidance of hemorrhage and lacerations calls for constant vigilance, and the after-treatment involves an infinite amount of painstaking."

From my own observation and that of others, I think I may safely say that the most objectionable features of the operation are the difficulty and discomfort of keeping the bones in apposition by the methods in vogue, and the consequent danger of pinching the urethra or bladder, the danger of hemorrhage, and the danger of infection in a wound so close to the vulva and urinary meatus. I believe, however, that by careful attention to technical details all these objectionable features may be overcome.

The ordinary rules of asepsis and antisepsis must, of course, be rigidly observed, and in addition I have the following three suggestions to make.

1. The incision need not extend as low as it is usually made. The lower angle of the wound may be pulled down with a retractor, after the incision has been made down to the bone, and sufficient room thus gained to complete the operation safely without extending the skin wound nearer than two inches to the urinary meatus. This I believe to be an important detail, as it greatly lessens the chances of infection.

2. The bone should be carefully and thoroughly separated from the tissues behind and below, great care being taken to keep next to the periosteum. It is also important that this separation extend from three-fourths of an inch to one inch on each side of the median line, to insure the safety of blood vessels and urethra when the bones are separated. Several large anterior vesical veins and veins from the clitoris lie embedded in the fat and loose connective tissue between the anterior wall of the bladder and urethra and the posterior and inferior surface of the pubic arch; but these vessels are safe and the urethra is.

¹ Dennis' "System of Surgery," vol. iv., p. 80.

safe if freeing of the bone be carefully done. After the bones are freed all around, the joint may be divided with a Galbiati knife, or preferably with an ordinary scalpel if the precaution be taken of first passing a grooved guard behind the line of incision, as recommended by Farabœuf, Lusk, and others. The articular surfaces are not plane surfaces. Irregular rounded projections of bone, except in very young subjects, will frequently be found passing across the median line from one side or the other and fitting into corresponding concavities of the opposite bone, with only a thin layer of cartilage between. This makes the line of incision irregular, and the irregularities can be better followed with a thin, sharp-pointed knife. If a thick knife be used these bony projections must be cut through forcibly.

3. I would recommend wiring the bones. I can conceive of no possible valid objection to uniting them firmly with stout silver wire, and believe that this will very materially shorten the time necessary for firm union, that it will insure firm union, and that it will add immensely to the comfort of the patient subsequent to operation. I am aware that necrosis and supuration have been attributed to the use of silver wire in this manner, but I freely confess that I do not believe such troubles can be justly attributed to the wire or the wiring. They could have been due to nothing but infection, and should infection of the wound occur it would be an easy matter to remove the wire. Farabœuf, Pinaud, and Caruso recommend silk sutures through the tough ligamentous tissue anterior to the pubes. Such silk sutures are worse than useless. When the strain of separation comes upon them they will tear through the tough tissues like hot wire through butter; and silk ligatures are vastly more irritating and vastly more apt to become infected than silver wire.

It has been pretty thoroughly and conclusively proved by Kelly and Halsted and many others, among whom might be included Marion Sims, that silver wire is the least irritating of all sutures; that it rarely, if ever, has to be removed on account of suppuration; that, on the contrary, it strongly tends to prevent infection. Silver sutures may be put through the bones almost as easily and quickly as silk through the ligaments. Bone is the only tissue in which ligatures subjected to such a strain will hold, and two stout silver wires will stand the strain and maintain perfect apposition. Lusk says: "The weak side of symphyseotomy is the imperfection of all methods thus far

devised to secure coaptation of the parted surfaces after the operation." I believe that the weak side may be made strong, and that we are entirely wrong in blaming silver wire with bad results due to infection or other causes. The safest of all material to bury is silver, and the safest material to bury it in is bone.

1418 L STREET.

ADENOMA OF THE BREAST.¹

BY

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BY way of premise I may say that I almost feel like apologizing to the Society for asking its consideration of so commonplace a subject; but there are certain points in connection with adenomata, particularly their pathology and treatment, which may be raised with propriety. Several cases which have recently come under my observation have directed my attention anew to the question of what is to be done with these growths. Occurring, as they do, for the most part in young women and occasioning little inconvenience, there is a tendency to advise and adopt a do-nothing policy, against which I desire to enter my protest. There seems to be an impression among the laity, and to some extent among physicians, that these growths are harmless. That this impression is wrong it is one of the objects of this paper to show.

Adenoma is a widespread form of tumor growth, but this inquiry is confined to one particular form, namely, that occurring in the female breast. The question of the cause of these growths may best be answered by a review of the pathology of tumors in general. The most generally accepted and, it may be said, the most reasonable theory refers tumors to the proliferation of embryonic cells pre-existent in the tissues and generally antenatal in date. In many instances these matrices remain latent for the want of some local exciting cause to call them into action. But when the exciting cause is brought to bear upon an organ or tissue containing these fetal remnants the result is a new growth or tumor. The cases of adenoma coming under my observation have been

¹ Read before the Washington Obstetrical and Gynecological Society.

in young girls or in young, childless married women. I do not recollect having seen one in a woman who has borne children. It is possible that this may have some weight as a causative factor. Realizing the intimate connection between the uterus and the mammary gland, of which we have almost daily illustrations, may it not be that the irritation necessary to start the cells into proliferative action may in the one case be furnished by the excitement of an ungratified sexual desire, and in the other by an absence of the physiologic enlargement incident to childbearing and lactation? In both equally we do have a frequently recurring congestion of the mamma, which may be an adequate cause. In other cases the exciting cause may be furnished by a blow or other injury to the breast, although in the writer's opinion not much importance is to be attached to this as a factor. Its importance is diminished, if not nullified, by the fact that every woman who finds a lump in her breast can recall some injury to the breast at one time or another, to which she is prone to refer the growth and to advance it as the cause of her trouble.

The one certain thing about these tumors is that we most often find them during the period of the greatest activity of the mammary gland, namely, from 15 to 35 years. It seems reasonable, therefore, to infer that the physiological excitement incident to this period must play a part in their origin and growth. It is essential, however, that there be a nucleus in the shape of embryonic cells which have failed to become specialized and to take on a higher type of growth and function.

As has been said, it is a rule, practically without exception, that these growths are found in women under 35 years of age. No doubt there may occur cases of adenoma in older women, but it seems a safe working rule to regard any breast tumor in women over this age as malignant and to treat it as such. The age limit, therefore, is quite an important factor in the diagnosis of these cases.

Histologically these growths are epithelial in structure and epiblastic or hypoblastic in nature. By the older authorities they were classed as fibromata, but more recent investigations have shown that in every case glandular elements can be made out, provided a sufficient number of sections be made from different parts of the tumor. Unlike carcinoma, they are encapsulated, a fact of great importance to the surgeon in operating upon a breast containing a growth of whose nature he is in doubt. Like all tumors of this class, adenoma

resembles the tissue in which it grows. Contrasting it with diffuse hyperplasia of gland tissue or with thickening of the milk ducts, with which it has been confused, we may say that adenoma never functionates. It is definitely and distinctly a neoplasm and should be regarded and treated as such. Microscopic section shows glandular elements embedded in a stroma of connective tissue. There are no ducts to carry off the products of cell proliferation, hence they often accumulate, leading to cystic degeneration of the growth. Adenomata of the mamma seldom exceed two inches in diameter. In this regard they are striking examples of the pathological rule that the nearer tumor elements resemble normal tissue the greater the probability of spontaneous cessation of growth.

Manifestly the question of most interest to us is whether or not these essentially benign growths ever become malignant. If they do not we may safely advise non-interference, as they seldom attain any size. If they may degenerate our course as conscientious practitioners is equally clear. It is hardly worth while to weary you with an enumeration of the opinions of various pathologists on this point. It may be summarized by saying that the almost unanimous verdict of the most recent and most weighty authorities is that degeneration may occur. Many years ago Gouley, of New York, expressed the belief that cancer frequently had its start in adenoma; and now D. J. Hamilton, the author of a late and careful work on pathology, gives it as his opinion that adenoma is always a precedent stage of carcinoma. He gives a very suggestive illustration to show how such a transformation could easily take place. Senn, in his recent work on tumors, proclaims himself a firm believer in this doctrine, stating that he has personally seen several instances of its truth. He sums up his opinion as follows: "We must, therefore, admit that the transformation of a benign growth . . . into a malignant tumor is not only possible but probable when the embryonic cells, under the influence of local or general causes, assume active tissue proliferation and their migration is permitted by a diminished physiological resistance on the part of the adjacent tissues."

The diagnosis of adenoma, like that of all tumors, is made by a consideration of the age of the patient, the size and rapidity of growth, its mobility, consistence, etc. In my experience these growths are frequently painful and tender, and I am inclined to agree with Senn in the opinion that "adenoma of the breast causes more suffering than does carcinoma of the

same organ and of the same size." The main factor in diagnosis is the age of the patient. I may be pardoned for reiterating the opinion that in women over 35 every breast tumor should be regarded as malignant until proved to be benign, while in younger women the weight of probability is in favor of the harmlessness of the growth.

As to treatment, it may be confidently stated that applications of iodine, liniments, ointments, etc., are worse than useless. Not only do they have no appreciable effect upon the tumor, but by setting up an irritative inflammation they may cause an adhesion of the capsule to the surrounding tissues, thereby rendering removal more difficult. In deference to the wishes of patients we may have to countenance a trial of this sort of treatment, if for no other reason than to demonstrate to them practically how useless it is. The same may be said of the use of electricity. To you it is hardly necessary to say that early operative removal is the only treatment to be advocated. Among the profession in general, however, there seems to prevail an opinion that these growths are innocent and unimportant. In several of my cases, when advocating operative interference, I have been met with the statement that the patient had seen several other physicians, who had advised non-interference on the ground that these lumps were harmless and would give rise to no trouble if let alone. In view of what we know of the nature of tumors in general, their growth and pathological history, such advice seems to me to be pernicious, and I cannot see how it can be given by any intelligent practitioner of this day and generation. If, as appears extremely probable, they may degenerate, or if adenoma is a precedent stage of carcinoma, there can be no question as to the propriety of early removal, especially as all medicinal therapeutics are useless. These growths are often the source of annoyance and alarm to their possessors, and, as they are generally painful, they give rise frequently to apprehensions which it is difficult to allay. As to that, though, I am not so sure that an apprehension of this kind should be allayed. The exact facts should be told the patient, and she should be informed that, while the growth is harmless in its incipency, there is danger of the more dreaded disease if the adenoma be allowed to remain. The necessity for early operation is the more imperative the nearer the patient is to the age limit.

It is in dealing with this class of tumors that the so-called "cancer doctor" finds a field for his nefarious operations.

Whether these growths be removed by pastes or by the knife, they do not return, and it is by means of his successes in this field, and by the exhibition of adenomata as cancers removed "roots and all," that the charlatan is enabled to delude the unfortunate victim of genuine cancerous disease until the time for hopeful operative interference has passed.

It is true that these growths seldom attain large size, and it is equally true that in many instances the patient may carry them for a lifetime without further inconvenience than the worry caused by the knowledge that she has a lump in her breast. But if it could be proved that only one in ten ever became cancerous, it would, in my judgment, be a perfectly adequate reason for urging the removal of all growths of this class. Every woman dreads the possibility of mammary cancer, and justly so. If we belittle the importance of adenomata we are likely to find our patient seeking other advice, and too often we find to our annoyance that she has drifted into the hands of the charlatan and has submitted to his unscientific and barbarous methods of procedure. If we can assure them that the tumor can be easily removed and that the operation will not be serious, we can keep them under our own control. And we can truthfully assure them this. The operation is easy, as a rule. A simple incision through the tissues down to the capsule allows a ready enucleation. Frequently we may dispense with general anesthesia, the use of cocaine being all-sufficient, although in patients of a nervous temperament I prefer general anesthesia. By a little manipulation multiple growths may be removed through a single incision. When the growths are very small they are sometimes difficult to find. Some patients, particularly young ladies, object even to the faint linear scar which is the only remnant of the operation if correctly done. In such cases Thomas' operation may be done and the scar placed under the breast, where it will not show should the patient be one who is in the habit of wearing low-necked dresses.

Prompt healing is the rule if proper asepsis be observed, and no recurrence need be expected, although similar growths may afterward appear in the other breast or in another part of the same breast.

The aim of this paper has been to lay stress upon the following points:

1. Adenomata are not the harmless growths that many

believe them to be, as there is a great probability that they may and do become cancerous.

2. That the let-alone and do-nothing policy with regard to them should be condemned.

3. Medicinal therapeutics, external and internal, are useless.

4. Early recourse to the knife affords a safe and satisfactory method of dealing with them, and will often spare us the mortification of seeing our patients fall into the hands of charlatans.

1218 TWELFTH STREET.

VENTRAL HERNIA.¹

BY

W. SINCLAIR BOWEN, M.D.,
Washington, D. C.

VENTRAL hernia may be congenital, or acquired by sudden falls, imperfect union following abdominal section, etc. It is most frequently seen in the median line and occurs more often in middle life. The protruding structures are often adherent to the skin, which may be so thin as to be transparent. The peritoneal covering may be adherent to the intestine, skin, etc., and not recognizable. There may be troublesome adhesions between omentum and adjacent structures. Many methods have been devised to close the abdomen with a view of preventing subsequent hernia, but results do not show fewer hernias after the tedious methods of closing each layer separately than when the through-and-through suturing is done, provided care be taken to approximate like tissues. What appears far more important in the prevention of hernia is the length of time celiotomy cases are required to remain in the horizontal position. The tendency should be rather toward over-precaution than to allow these cases to resume the erect posture in ten days or two weeks, as is sometimes done. It is far better to keep such cases four weeks in the recumbent posture in bed. In regard to ventral hernia Bull says: "A radical operation may be done, but we have as yet no evidence as to the final results." I wish to present this evening a preliminary report

¹ Read before the Washington Obstetrical and Gynecological Society.

upon an operation for the cure of ventral hernia which has so far been successful, and while the number of cases reported is too small to be a strong argument in its favor, they were unfavorable cases for any operation and therefore attest its value the more. We have all seen repeated failures follow operations for ventral hernia after the most painstaking removal of all so-called scar tissue and finally the introduction of very many sutures, bringing the abdominal walls tightly together without possibly a careful approximation of like structures. This cutting away of cicatricial tissue enlarges the hernial ring, thereby increasing tension upon sutures. The essential feature of the operation above referred to is to *split the hernial ring* all the way around until the recti muscles are plainly in view and easily approximated, and not to cut away any tissue. This gives us an upper and a lower layer of fascia. If the peritoneum be opened it may be closed by fine catgut, or not at all, as the next sutures will suffice for that. Then fine silk sutures are used to close the lower fascia layer, overlapping the edges; next, fine silk sutures unite muscle and upper fascia layer, overlapping edges of the latter; thus giving us two layers of permanent sutures for additional support. Finally, the skin and subcutaneous fat may be sutured with silkworm gut or any desirable material. By means of this "ring-splitting operation" tension is lessened, the size of the ring is rather diminished than increased, we have two layers of fascia instead of one, and, since the median line is in this way made thicker, it tends to throw intra-abdominal pressure away from the seat of former rupture, lessening the probability of recurrence of hernia there. It will be urged as unsurgical not to remove the cicatricial tissues about the ring, and theoretically it would seem unwise, but I believe, for the reasons stated, it is better to leave it.

The first case referred to in this report was a female, white, age 55 years, weighing two hundred and ten pounds, with a very large, pendulous abdomen, and a ventral hernia, about the size of an adult head, just below the umbilicus. She gave the history of having fallen down-stairs two years previously, and immediately a lump appeared in the region stated, first small, but it soon began to enlarge. Under medical advice she wore abdominal supports constantly. During the past few years the mass had increased more rapidly in size, and she could no longer reduce the hernia even when lying down. At times it was painful, and seemed to be made more so by the

support; but on leaving this off it became very large, so that under any circumstances she was most uncomfortable, and, besides greatly fearing strangulation, her condition was not a happy one. This case was operated upon at her home, and on cutting through the skin, which was extremely thin, I came directly upon three loops of small intestine and a mass of omentum, all matted together by adhesions, which were also connected with skin and other tissues about the ring. I could not distinguish peritoneum. The omentum was separated from intestines and other tissues, ligated, and cut away before the bowel could be returned. The ring was then split and closed as stated above, and the patient kept in bed four weeks. Her convalescence was uneventful. It is now twenty-two months since the operation, and there is no sign of returning hernia. She attends to her housekeeping, going up and down stairs, and walks as far as she pleases. This case might, I think, have been considered unfavorable for operation, since she weighed two hundred and ten pounds, and, having a very large abdomen, there was great intra-abdominal pressure brought to bear upon abdominal walls thinned by a hernia of ten years' standing. Case 2 had been operated upon three times by abdominal section before she came under my care, still suffering from a large ventral hernia. The first and second operations were done for the removal of right and left ovarian cysts, and the third for the cure of the ventral hernia, which had existed since the first operation eleven years ago. These three operations upon this one patient were done by a gynecologist of great fame as an abdominal surgeon, and I can testify to his care and thoroughness in the performance of the second and third operations, not being present at the first. However, the hernia returned, each time larger than before, and it made its appearance soon after the patient began sitting up. Owing to pain of a pinching character, at times intense, in the region of the hernia, and associated with nausea or vomiting, she again sought relief by operation. I operated upon this case at Garfield Hospital, with the assistance of Dr. F. M. Nesmith. The old scar was removed by careful dissection, separating skin from peritoneum without wounding the latter, and with a blunt instrument the peritoneum and hernial contents were pushed through the ring into the abdominal cavity, making an extraperitoneal operation. The succeeding steps were followed out as in the first case, and the patient has since been free of hernia eleven months, although she has had

during that time an attack of bronchial asthma with violent paroxysms of coughing. This case I consider was unfavorable for operation, since a good operator had made three unsuccessful attempts to cure, and because it was of long standing.

1228 SIXTEENTH STREET.

REPORT OF CELIOTOMY DONE UNDER THE "INFILTRATION ANESTHESIA" OF SCHLEICH FOR SUSPENSIO UTERI.

BY

C. W. STROBELL, M.D.,
Rutland, Vermont.

SINCE my report on the infiltration anesthesia of Schleich¹ I have been waiting an opportunity to perform celiotomy by this method, but had not found a typical case for the test where the patient was also willing to undergo the ordeal. I now report the following.

Mrs. C., American, age 48, multipara; eighteen years since last labor. Epileptic. Symptoms referable to heart, lungs, and pelvis. Avoiding unnecessary detail, the physical conditions alone will be given as elicited by examination.

Heart.—Chronic endocarditis. Mitral and aortic regurgitant murmurs. Purring thrill at apex. Area of cardiac dullness extends from right of sternum to left mammillary line. Apex beat in fifth intercostal space. Lips and finger nails slightly cyanotic; dyspnea upon slight exertion. Edema of lower extremities.

Lungs.—Chronic bronchorrhea. Râles coarse, moist, abundant. Expectoration profuse, approximating two hundred grammes daily; gelatinous, opaque, viscid, and flecked with aggregations of green and yellow pus.

Pelvic Organs.—Ovaries and tubes prolapsed, tender, and fixed. Uterus hyperplastic, in complete retroversion, and somewhat firmly fixed in sacral hollow. Sacral lymphatics engorged and tender. Passage of sound provokes hemorrhage from fungoid masses. Deep left commissural laceration of cervix, with extreme eversion and erosion. Recto- and vesicocele. Perineum deeply lacerated. Copious purulent metritic and vaginal discharge.

¹ Amer. Med. Surg. Bull., Oct., 1896.

The patient came for relief of pelvic pain. She had been undergoing palliative treatment for years, and was now insistent upon operative relief beyond that curetting alone would afford, she having undergone this procedure two years before.

The operations indicated were plainly curettage, trachelorrhaphy, anterior colporrhaphy, colpo-perineorrhaphy, abdominal section, extrication of the ovaries, tubes, and uterus by suspension of the uterus to the abdominal wall; and all this without a general anesthetic, the condition of her circulatory and respiratory apparatus absolutely forbidding its continuous employment for the time required.

The case was plainly stated to her, both as to required operations and our resources. She unhesitatingly chose and insisted upon having the benefits of them, assuming all the risk. Accordingly she entered the hospital, and two days later submitted to curettage and trachelorrhaphy without anesthesia, anterior colporrhaphy and posterior colpo-perineorrhaphy being reserved for future attention under infiltration. All went finely; improvement was rapid and patient in the best of spirits.

On December 18, 1897, celiotomy was done under infiltration anesthesia of Schleich. The solution employed was composed as follows:

SOL. NO. 2. SCHLEICH.

Nat. chlor.....	0.1
Morph. sulph	0.025
Cocain. hydrochlor.....	0.2
Aq. dest. steril.	ad 100.0
Adde acid. carb. (5 per cent). gtt. 2.	

Common hypodermatic syringes provided with extra long needles were used. Infiltration was begun in the linea alba, 3 centimetres above pubic crest. A strip $3\frac{1}{2}$ centimetres in width, extending upward 10 centimetres, having the linea alba as a dividing line, was prepared as follows:

The needle was entered parallel with and just beneath the surface of the skin to the depth of 1 centimetre, and a drop or two of the fluid forced out, raising a small white circumscribed blister or wheal. The needle was then withdrawn and plunged into the apex of the benumbed white spot, parallel with the surface, as before, and thrust along to its sensitive border, where again a few drops were deposited, forming a second wheal in the chain thus commenced. This process was continued rapidly in all directions, extending also into the musculature underlying the above-described area.

Deep infiltration is readily accomplished in any direction by

thrusting the needle into the wheal to its periphery in that direction, and, after forcing out a few drops, urging the needle forward a centimetre, repeating the process to the limit desired. This process is absolutely painless throughout; if it is not so, the fault lies with the operator's technique.

We had now a strip of infiltrated abdominal wall, with limits as stated above and bounded below by the peritoneum, that was absolutely insensitive and could consequently be incised, punctured, or lacerated for from fifteen to twenty minutes with the utmost indifference on the part of the patient, so long as we kept absolutely within the limits, tissue immediately without these bounds remaining as absolutely normal. The process of infiltration occupied about five minutes. The section was then boldly made down to the peritoneum without the slightest sign from the patient. The tissues were blanched and incision almost bloodless. The peritoneum was rapidly infiltrated and opened. Still no pain. Upon exploration of pelvis adhesions were found exceedingly dense, tough, and extensive; and as I had not the special "Schleich" needles for deep infiltration used by him in such cases, and divining that the shock and pain of separating these would tax the patient most severely, I directed that chloroform be administered to the evanescent stage of primary anesthesia. That, as is well known, occurs two or three minutes after the inhalation is begun and lasts but one minute, after which, if the anesthetic is continued, the patient enters the second or "excitement" stage. This period reached, the adhesions were rapidly severed, the patient almost immediately regaining consciousness, but had "felt nothing." Ovaries and tubes thus freed showed congestive tissue changes, but did not require removal. In case salpingo-oöphorectomy had been indicated, infiltration of the broad and round ligaments and tubes along the line of proposed ligation would have been done preliminary to enucleation.

Capillary oozing was slight and soon checked. The uterus was drawn up into position and fundus infiltrated along line of proposed suspension suture tracks. Five through-and-through silk gut sutures were passed, the lower two including the fundus. One litre of saline solution was left in the peritoneal cavity after completing its toilet. While ligating sutures, patient even ventured some facetious remarks. I now asked the patient "if she had felt any pain." She said: "I have not felt any pain at all, except the first stab of the hypodermatic needle, and that was very slight indeed."

To illustrate the impression made by this unique laparotomy

upon those who had witnessed and assisted at such operations repeatedly, I may be pardoned if I quote the reply of the chief nurse in answer to my query "as to what her impression was." She replied: "If there had been a hypnotist present she could have accounted for it, but as there was not she could not understand."

Of course this was not the impression of the physicians present, though all expressed themselves delighted and agreeably surprised at the result.

Surgical shock was slight and quickly reacted from and the course of convalescence was uninterrupted. The three upper stitches were to be removed on the morning of the seventh day. By the evening of the sixth no complications had arisen; all was going finely. The beginning of the seventh twenty-four hours patient showed some slight restlessness. This continued for two hours, when suddenly, while nurses were giving her some little attention, a convulsion passed over her, followed by all the manifestations of typical apoplexy.

There was conjugate deviation of eyes, pupils partially dilated and fixed, stertorous breathing, pulse rapid and very feeble, surface cool and moist, complete general paralysis, general relaxation so extreme as to mask paralysis. Temperature rose rapidly to 103° . Death in five hours—an unhappy termination of a case auspiciously begun, and which seemed in no way connected with the operation or the method.

This peculiar termination of the patient's career by apoplexy had been impending for years, as her history will sufficiently indicate; that it should have occurred at this particular time was a coincidence rather than a consequence, though of course the excitement may have contributed thereto. But this should in no wise detract from or impair the value of the practical or clinical demonstration, which in itself was a perfect success, whatever other criticism may be made.

23 $\frac{1}{2}$ MERCHANTS ROW.

CORRESPONDENCE.

A CASE OF RECURRENT VULVAR GROWTH.

TO THE EDITOR OF THE AMERICAN JOURNAL OF OBSTETRICS, ETC

DEAR SIR:—In the September number of the JOURNAL there appears an article entitled "A Case of Recurrent Vulvar Growth," by Dr. Wells and myself, in which I declare my

belief, in spite of the microscopic examination, as to the malignancy of the case and strongly advise the removal of the growth which had appeared since the original excision. In accordance with my advice the secondary growth was excised by Dr. Wells and the specimen examined by Dr. Kyle. The result of the examination was sent me by Dr. Wells, and is appended:

DEAR DR. BALDY:—I enclose Dr. Kyle's report of tumor. It agrees with our opinion pretty well, I think:

"Specimen, tissue from vulva. Patient, Mrs. McD. Physician, Dr. W. H. Wells. Received June 18, 1898.

"Sections perpendicular to the surface showed a thickened layer of epithelium, hard and dense at certain points. The papillæ were lengthened and irregular in shape, with branches extending into the surrounding connective tissue. There was distinct nesting of the epithelial cells. The connective tissue beneath showed some fibrous change, more marked in certain areas. The blood vessels were limited to the connective-tissue stroma and showed slightly thickened walls. The tissue showed no normal gland structure.

"Diagnosis: carcinoma; subvariety, epithelioma.

"[Signed]

KYLE."

Kindly return the report to me.

Sincerely yours,

W. H. WELLS.

The result is no surprise to me. It is only what I have seen many times in my experience. and it only adds the more to my conviction that it is a gross mistake for a physician to be led blindly by our laboratory colleagues. A wide clinical experience is worth more than all the microscopes ever invented. By this I do not mean to decry the value of the microscope as an aid to the physician, but I do mean to protest against the habit, which is growing so universal, of trusting all to this instrument to the neglect of a close clinical study of the case.

If, after an exhaustive clinical study of a case, the microscope agrees with the conclusions forced upon one by the symptoms—well and good. If it opens one's eyes to something heretofore not suspected—better still. But if it decries that which is clearly indicated clinically, then it should be looked upon with suspicion. In this event, if the case be one in which waiting and watching will do no harm—wait and watch; if, however, action be important to the future outcome of the case, then without hesitation I say ignore the microscope and proceed on the clinical facts.

All the laboratory work in the world will not take the place

of clinical data well gathered and well weighed. It is becoming altogether too fashionable to place all reliance on the laboratory, and therein, I believe, lies one of the future dangers in medical advance, especially amongst the younger members of our profession. I continually refuse to allow laboratory data to dictate my action, and expect to continue to do so, so long as it clashes with my clinical judgment. Many a time would it have led me into such error as the above case illustrates, had I not had the confidence born of long clinical experience.

The tendency to the abandonment of careful clinical and bedside study for that of the laboratory is the crying medical evil of the day.

Very truly yours,

J. M. BALDY.

1722 CHESTNUT STREET, PHILADELPHIA.

RETROVERSION OF THE PREGNANT UTERUS.

TO THE EDITOR OF THE AMERICAN JOURNAL OF OBSTETRICS, ETC.

DEAR SIR:—In connection with the paper lately read by Dr. Mann at the Boston meeting of the American Gynecological Society and its discussion on that occasion, it may not be amiss to relate the following case of incarcerated pregnant uterus together with its previous history.

On April 4, 1892, I was consulted by Miss R. for an abdominal enlargement, especially noticeable in the right hypochondriac region and when the bladder was full. Her age was 32. Previous history not important

On examination I felt a firm, elastic, and somewhat fluctuating tumor in right and middle abdomen reaching up to two-thirds the way to the navel. Per vaginam the finger came upon a hard mass pressing well down into Douglas' pouch, while the cervix was found high up in front above pubes. By combined rectal and vaginal touch the tumor was found to come down to within an inch of the perineum. On its lower surface could be felt some bony plates about two inches in diameter, suggesting the undeveloped cranial bones of a fetus.

On April 8 I opened the abdomen and removed a dermoid tumor of right ovary nearly the size of an adult head, made up of two or three sacs containing an oily, sebaceous liquid, with

a few teeth in a piece of jawbone, a mass of hair the size of small orange, and the skull bones before mentioned. With the exception of a thick, broad adhesion on left side, an inch and a quarter wide, which required ligatures, the tumor was turned out without any especial difficulty.

Patient did fairly well after operation and was able to leave the hospital on May 6.

About two months afterward she was married, and on the first of May following she presented herself with a retroverted pregnant uterus, which, after trying the usual methods of pressure per vaginam and rectum in the knee-elbow position, I was enabled to reduce into position by the aid of a Petersen's bag placed in the rectum and then inflated.

On October 6 she gave birth to a ten-pound boy.

Subsequently, at various times, I found the uterus retroflexed and lying *very* low, almost, at the outlet of the vagina.

Remarks.—It would seem in this case that the dermoid had so stretched the ligaments of the uterus and the other soft parts in the posterior pelvis that after its removal the uterus at once fell downward and backward into the space occupied by the tumor.

I report the case chiefly, however, to call attention to the use of Petersen's bag in the rectum in these troublesome cases of retroverted pregnant uteri.

A. B. ATHERTON.

FREDERICTON, N. B., August 19, 1898.

NORMAL SALT SOLUTION.

TO THE EDITOR OF THE AMERICAN JOURNAL OF OBSTETRICS, ETC.

DEAR SIR:—In this month's (August, 1898) issue of your JOURNAL there appears a letter from Dr. John J. Gaynor, in which he says it is improper to use the term "normal salt solution" for the solution ordinarily employed, and suggests instead that we call this solution "deci-normal." I am afraid the doctor has made a mistake in his calculations somewhere, probably by misplacing the decimal point.

In each one thousand parts of the normal human blood there are six of salts (Landois and Sterling, fourth edition), which is equivalent to 0.6 per cent (six-tenths of one per cent). To make a *normal* salt solution we should then employ about

ninety grains of NaCl to one quart of pure water, or approximately six grammes to the litre.

When Dr. Gaynor used 58.4 grammes of NaCl to the litre he made his solution ten times stronger than the normal solution—or a “*deca-normal*” solution, if I may be allowed to coin a word for this occasion. I would like to ask the doctor where he found his authority for doing this. The doctor has, of course, been using the solution in its normal strength, but he has given it an *abnormal* name, for he is mistaken when he calls a solution containing 5.84 grammes to the litre a “*deci-normal*” solution, for it is a *normal* solution, not only in *name* but *strength*.

Yours truly,

W. H. ROBERTS.

PASADENA, CAL.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of January 7, 1898.

The President, T. C. SMITH, M.D., in the Chair.

DR. I. S. STONE presented

A FIBROID TUMOR OF THE UTERUS UNDERGOING DEGENERATION,

also an abscess which he said was probably of ovarian origin, which he had removed entire. It had reached to the umbilicus and contained about two quarts of pus.

DR. J. WESLEY BOVÉE showed two cases of

RUPTURED TUBAL PREGNANCY

with histories as follows: The first was from a colored married nullipara, 28 years old, who was seen by Dr. C. Koonen on the night of December 4, 1897, who diagnosed the condition correctly and sent her to Columbia Hospital. She had been seized with severe pain on the morning of the 3d and suffered great prostration. The last menstrual period was October 7, and this together with the examination led him to the diagnosis. When she reached the hospital a few minutes before 11 that night she was almost pulseless and suffering intense pain in the left inguinal region; she was clamorous and nearly wild from loss of blood, and the skin was pale and cold. The abdomen was at once opened and an unusual amount of fluid blood and clots escaped; the left appendage was grasped and

clamped at both ends. A mass on the posterior wall of the uterus that interfered with the operation was torn away unintentionally and proved to be a pediculated fibroid of about three inches in diameter. The stump was stitched by continuous suture, and, all bleeding being stopped, the cavity was washed out with hot salt solution, while two quarts of the same solution were put under the skin; wound closed with through-and-through silkworm gut with no drainage. The operation took but twenty minutes, but she died at 3 A.M. of the following day.

The second case was that of a white woman, 42 years old, who had been married fifteen years and had never been pregnant. She was sent to his service by her physician December 13, 1897, having had profuse bleeding from the uterus for eight weeks that had begun with severe pain in the left side of the lower part of the abdomen. Flow was then constant, but not so severe as earlier. She was sent for a curetting, but an examination revealed a mass in the left side of the pelvis that pushed the small uterus to the right and front. Ruptured ectopic pregnancy was diagnosed and an operation advised; next day the abdomen was opened and a large amount of clots and some fluid blood were removed. The mass proved to be an enlarged pregnant and ruptured Fallopian tube; the rupture was not far from the fimbriæ; the tube contained some membrane and some clots, but no free pus was found. The other appendage being badly adherent and its fimbriated end being occluded, it was also removed; it contained some bloody fluid and the ovary was sclero-cystic. She made an excellent recovery.

DR. JOSEPH TABER JOHNSON showed a

CANCEROUS UTERUS REMOVED BY THE VAGINA WITH
CLAMPS.

DR. W. S. BOWEN read the paper of the evening, entitled

VENTRAL HERNIA.¹

DR. T. C. SMITH said a lady had been to his office with a ventral hernia after celiotomy, who said she had gone to the surgeon who had done the operation: that he had told her that it was no use for her to be operated on, for she could not be cured. The remark had surprised him, and he asked if good results could not be had from operations on this class of cases.

DR. JOSEPH TABER JOHNSON said the President was right: all these cases can be relieved. Probably this lady had been misinformed or the operator afraid to operate on this individual case. He said he did not see why the operation as described by Dr. Bowen, ring-splitting, or, as Tait does on the perineum, with flaps, should not be a success. Ventral hernia is a horrible thing; it makes the patient feel worse than almost any other similar trouble. Operators report patients up in ten days or two weeks; these are the patients in whom we frequently

¹ See original article, p. 547.

find herniæ. Sometimes the meaning of the surgeon is misunderstood, especially if the patient is in a private hospital, for the patient feels well and sees no reason why she should remain at the hospital under so much expense; nevertheless we should give them the proper advice about remaining in the hospital the safe length of time. He used the through-and-through method of suturing the abdominal wall, and in five hundred cases he had not had more than seven return to him with hernia. More might have occurred, but he had not heard of them. Other operators' patients came to him with this condition, and he supposed his might go to some one else. He did not sew up the abdomen with several layers. He had talked with Dr. Gibney, who had charge of the hospital for cripples in New York, and his experience had been that just as many patients had hernia after the one method of suturing as the other. Dr. Macdonald, in speaking of the Bacini method of suturing, says it does not prevent hernia. Dr. Edebohls has used a permanent suture for the fascia, also Dr. Kelly uses silver wire, so that the tissues are held permanently. Dr. Johnson was careful to get more fascia than other tissues in each suture. He had operated on three or four cases of ventral hernia. He had opened the abdomen, but did not consider it necessary; if there is a great deal of peritoneal sac it can be amputated. Dr. Bowen's cases were very successful.

DR. J. WESLEY BOVÉE said the method of closing the abdominal incision does have something to do with the production of hernia after operation. When drainage with tube or gauze is used there is of necessity a weak spot in the union. The thing to do is to get like tissue together, fascia to fascia, etc. The patient should not be allowed to get up too soon; a fall or a fit of coughing may cause a rupture. Dr. Bovée said he had been in the habit of bringing tissue together as in the mattress suture, but this is not proper. Nothing equals the over-and-over suture, seeing that no bulging point of tissue slips up. Catgut is better than the permanent suture; he had found catgut intact a long time after it was introduced. Permanent sutures do not hold the tissues, as claimed by Kelly and Edebohls. In dogs, silver wire removed after a time is found to be simply encysted. Through-and-through suture is best where time is important, as it can be more quickly introduced. The peritoneum will be closed in twenty-four hours. Currier says it is not necessary to suture the peritoneum. The wound is coaptated best by the through-and-through, as there is apt to be a space between the different layers in the tiers. He endeavored to get very little fat in the suture, as it does not hold and will break down and suppurate if there is much tension. If there is much tension he liked to introduce tension sutures inserted about two inches from the incision. Silkworm gut is used and is passed through the integument and fascia of the peritoneum, and through the other side the same way. It is then introduced a short distance from where it emerged and carried back to near its original point of insertion. A small piece of

gauze is put in the loop at either end and the suture tightened to the proper tension. Two or three are used, as needed. The proper method for operating on ventral hernia is to get rid of as much cicatricial tissue as possible and to use tension sutures. The ring-splitting of Dr. Bowen is good, but the cicatricial tissue should not be left in the wound.

Meeting of February 4, 1898.

Vice-President J. T. WINTER, M.D., in the Chair.

DR. I. S. STONE presented a specimen of myoma uteri and reported a case of

MANIA FOLLOWING HYSTERECTOMY.

A lady, age 48, had a rapidly growing tumor of uterine origin which had been giving the usual pressure symptoms and had recently caused menorrhagia. The patient was very anxious to have the tumor removed, and came to his hospital January 11 for that purpose. January 14 Baer's operation was done. The operation was technically satisfactory. The day following the temperature reached 102° F. and the pulse 118-120. On the third day her condition was something like that of septicemia, and the lower part of the wound was opened down to the muscle, but not to the peritoneum. There was at no time any sign of peritonitis or any trouble around the stump. The wound was made to suppurate as a result of its after-treatment. On the seventh day her symptoms were those of acute uremia added to sepsis, so far as all indications went, save the pulse and temperature. The chart will give but little information as to her real condition. Her appearance and behavior were typical of typhoid fever. Delirium, picking at the bedclothes, and constant movements of the hands, with dry and brown tongue, all gave color to some septic condition which might have for its origin either wound infection or else the poison of a continued fever. She was comatose during the greater part of the second week. To add to the other grave symptoms, the patient had symptoms of meningitis. Her hands were almost constantly twitching, her jaws were decidedly rigid, while the sterno-cleido-mastoid muscles were strongly contracted, the left more than the right, which had the effect of turning her head to that side. However, the symptoms somewhat abated, so that by the end of the second week the mental symptoms were left decidedly conspicuous. She had not slept well at any time since the operation, and her nervous condition was at first thought due to insomnia. Her bladder was incompetent at least two weeks of the period since the operation, but this symptom has decidedly improved and she now calls the nurse when necessary. Although the patient has improved physically and in every other respect, her mental condition remains far from satisfactory. An interesting feature

of the case has been thus far omitted. At the end of the first week the solids so nearly disappeared from her urine as to cause grave apprehension. As all of the urine could not be collected, it was impossible to learn how much urea was excreted, but the specimen examined appeared to be nearly all water. There was a slight trace of albumin, but no casts. It is quite possible that the coma was due largely to the uremia, and this view is borne out by her improved condition after the amount of solids had increased in the urine. It may be of interest to some present that an examination of her blood gave color to the possibility of typhoid fever. Dr. Reed made the examination and reported a certain amount of "clumping" of the bacilli. He called my attention to the fact, noted by some very careful pathologists, that "clumping" occurs in patients comatose from other causes than the toxemia of typhoid fever. The chart will show the temperature to have been practically normal for the last week. At the present time her delirium is marked, although she answers questions correctly. Her constant desire is to get out of bed, and it is with the greatest difficulty that the nurse can restrain her when much excited.

Treatment.—The bromides seemed to do harm every time a dose was administered. Stimulation with alcoholics at first clearly benefited the patient. The hydrobromate of hyoscyne had a most charming effect in $\frac{1}{100}$ -grain doses during the period of greatest excitement. It has, however, lost its effect to some extent, and has now to be given in doses of $\frac{1}{50}$ grain. Calomel in small doses given from time to time was the only drug used to act upon the kidneys, and the usual sweating, purgation, etc., was not prescribed.

DR. J. WESLEY BOVÉE said it would be interesting to know the anesthetic used, the amount and duration.

DR. STONE answered, ether in moderate quantity and for one hour.

DR. BOVÉE, continuing, said he had a case two weeks ago, a young lady who had a number of fibroids. In twenty-four hours after the operation the temperature became very high, and she secreted only one ounce of urine in twenty-four hours, and this was so loaded with albumin that after boiling it was solid. She died on the third day, of nephritis. Dr. Bovée thought the effect on the nervous system of Dr. Stone's case was due to uremia.

DR. WILLIAM P. CARR said he questioned the diagnosis of post-operative mania. He did not see anything in the symptoms named that might not be produced by septic poisoning. There was undoubted uremia. Hyoscyamus produced maniacal excitement. He had a case at the Garfield Hospital that developed mania after operation, but she was being given morphia and hyoscyamus. These drugs were stopped and she promptly became sane.

The paper of the evening, read by DR. WILLIAM P. CARR, was entitled

REMARKS ON THE TECHNIQUE OF SYMPHYSEOTOMY, WITH THE REPORT OF TWO CASES.¹

DR. H. D. FRY congratulated Dr. Carr on the recovery of both his cases, particularly the second one, who was evidently suffering from serious septic trouble. Unfortunately the essayist had not in either case given any idea of the character of the dystocia. The pelvic measurements were given in one case, it is true, but they were not made until after the operation had been performed. In neither case is the diagonal conjugate mentioned. In all cases requiring artificial delivery, except simple forceps operations, we should ascertain the variety and degree of pelvic contraction as a preliminary to determining the best method of procedure. The disproportion between the diameters of the fetal head and those of the pelvic canal must be calculated, and with this knowledge we are in a position to decide and make the operation one of election and not as a last resort. In Dr. Carr's cases it was simply a stroke of good luck that the operation fitted the occasions.

Dr. Fry also differed with the statement made by the reader of the paper that in all cases when the head could not be made to engage at the brim with the forceps, a cutting operation would be necessary to effect a delivery. Indeed, he questioned the propriety of applying the forceps at the brim in any cases that were not engaged. Version was the proper method to employ, and in nearly all cases it would be satisfactory when the obstetrical conjugate was not less than three and a half inches. The acceptance of Dr. Carr's opinion in this matter would exclude this valuable method in the very class of cases to which it is most applicable.

Regarding the technique of the operation, although Dr. Carr described his as the ordinary method, it was different from any that Dr. Fry had ever read. The position and length of the incisions were a compromise between the so-called "open" and "subcutaneous" methods, and Dr. Carr inserts his Galbiati knife from below the pubic joint instead of above. Again, he ignores completely the use of a male sound or some instrument to hold the urethra and neck of the bladder out of harm's way. There are four methods of performing the operation. In Morisani's the incision is made about one inch long, between the recti muscles, in the median line and just above the symphysis. In the open method the incision is in front of the joint, beginning at the upper border of the bone and extending down to, and sometimes to one side of, the clitoris. The modification suggested by Harris, of Chicago, requires a smaller incision over the front of the joint and the division of the deep perineal fascia attached to the pubic rami. The value of his suggestion is that it prevents tearing of the subjacent tissues and profuse hemorrhage.

Dr. Fry said if the opportunity came to him again to perform symphyseotomy he would adopt the method suggested by

¹ See original article, p. 535.

Ayres, of New York. This is more strictly a subcutaneous method, and, it is interesting to know, is nearly the same that Williams, of Texas, performed in 1880. Robert P. Harris has brought to light this and other hidden cases performed by this pioneer operator in America. The clitoris held up and to the left side, a sharp pointed bistoury is passed along the front of the pubic bone nearly to the top. A blunt-pointed curved bistoury is then substituted for it, and, guided by the finger in the vagina in contact with the knife over the pubis, the joint is severed by cutting backward.

The speaker did not agree with the essayist regarding the anatomy of the pubic joint. Except in subjects of advanced age, he doubted the existence of bony projections and depressions fitting into each other. There was ordinarily an intervening fibrous tissue, wedge shape, with the base outward. Posteriorly and projecting between the bones there was a small synovial sac, but he did not think it possible for the amount of fluid which the operator said escaped after the operation to have been secreted by this membrane. Most likely it was a serous exudate from the lacerated tissues. Dr. Carr advocated in future cases the use of silver wire to suture the ends of the bones together. Evidently he had not looked up the literature of the subject, or he would have seen that the unfavorable result of such method has led to its disuse. Firm union has been secured by immobilizing the joint with a broad band of webbing, with a buckle which could be tightened if needed.

DR. I. S. STONE asked if the bones did not unite with ends rather further apart than originally.

DR. FRY said that they were as closely united as formerly, and spoke of a pelvis procured four months after symphyseotomy, in which the bones were as if they had never been separated.

DR. WILLIAM P. CARR said, in closing, that measurements had been made and careful consideration had been given the cases before deciding what was best to do. External measurements are not accurate, not within one-quarter or even one-half of an inch, but it is the best we can do and we are obliged to rely on them. It is not justifiable to do symphyseotomy until the forceps has been tried. In the majority of cases the forceps has been tried before the operator has been called. His second case had had forceps with no antiseptic precautions. The weak condition of the patient, the capillary bronchitis, and the sepsis made the conditions quite grave. He had used the method of operating described by Lusk. The length of the incision is of very little importance if it is far enough away from the urinary meatus, though it is better to have plenty of room to work. The catheter in the urethra is not necessary if the operator is skilful. There is no danger of hemorrhage in the open method, if properly done. Suturing bones with wire he knew had been done. He said it was hard for him to believe that silver wire could cause bad results here when it is used with impunity in other parts of the body.

In regard to the amount of fluid discharged from the synovial membrane, he had seen a case of housemaid's knee discharge an equal amount. The bones in his first case were kept well together, but in the second they were not. Slight movement does not interfere with walking.

Meeting of February 18, 1898.

The President, T. C. SMITH, M.D., in the Chair.

The paper of the evening was read by DR. E. A. BALLOCH, entitled

ADENOMA OF THE BREAST.¹

DR. J. FORD THOMPSON thought the statements regarding pathology were made too confidently. He had seen adenoma develop into carcinoma. He had operated on what he had supposed was an adenoma and found a cyst. When the nodules are multiple he always operated. If patients with these growths are unhappy and miserable and are not operated on, they are sure to fall into the hands of the quacks. The radical operation is not necessary. Adenomata do not return, except it may be in advanced age.

DR. H. L. E. JOHNSON advised the radical operation, and cited cases, thought benign, which returned as malignant growths. It is very difficult to determine which are malignant and which are benign at first. At the age of the menopause retrogressive change takes place rapidly. If young women with small growths could keep them from being irritated by examinations or otherwise, they would seldom have to be operated on for malignancy. Dr. Johnson recommended that if an operation has to be done the entire gland should be removed and even the axillary glands.

DR. J. T. WINTER asked if in case of the flap operation being done, would the gland be of use afterward?

DR. J. FORD THOMPSON said, yes, and, continuing, said he did not agree with Dr. Johnson. These growths are encapsulated and can be taken out as clean as a fatty tumor. It is radical, for all diseased tissue is removed.

DR. J. WESLEY BOVÉE agreed with Dr. Thompson—remove only the adenoma. If it is malignant take out the breast and the axillary glands also, for no half-way operation will do.

DR. E. A. BALLOCH, in closing, said that he did not agree with Dr. Johnson as to the radical operation being always necessary. If we find these growths pop out like an onion from its skin, it is not necessary to remove the whole gland. It is hard to convince young women that it is necessary to take off the whole gland; but if we explain that only the small nodule is removed and that the scar will not show, they will submit.

¹ See original article, p. 542.

Meeting of March 4, 1898.

The President, T. C. SMITH, M.D., in the Chair.

The paper was read by DR. J. WESLEY BOVÉE, entitled

PERMEABILITY OF THE STUMP AFTER SALPINGECTOMY.¹

The important points in the cases recited are, first, what are the causes of the open condition of the canal of the Fallopian tube stump after the ordinary operation of salpingectomy; second, what the sequelæ or dangers of such condition; and, third, may the condition be prevented, and in what manner?

As to the causes, the author is inclined to believe from experience and observation that too much of the tube is left at the uterine end when its removal has been attempted; that the operation has not been as complete as necessary, or the ligature slips off the elastic tube stump shortly after operation, with repair of the crushed end and reopening of its canal. In many cases the tube has become so infiltrated, even to the uterus, in inflammatory conditions, that the ligature cuts completely through it when applied tightly. In such, while the blood vessels are successfully ligated, the stump of the tube is left open and free at this point, with the prospect that it will be so through to the uterus. Acute inflammation at site of the traumatism incident to amputation and ligation may be engrafted on the chronic condition of infiltration and result in such resolution as to reproduce a normal condition of the tube stump.

The sequelæ of permeability of salpingectomy stumps are, principally, reinfection of the stump or of peritoneum and pregnancy. In many cases a diseased endometrium is present at the time of operation that may extend to the stump, and all operators of ripe experience have noticed stump infection here. The patient is as liable after operation as before to infection by the gonococcus or other micro-organism attacking the endometrium, and the short, open Fallopian tube stump offers opportunity for rapid invasion of the peritoneum.

The liability to pregnancy in such condition of the tube stump when ovarian tissue is left behind has been mentioned. Ordinarily this is a very wise provision of Nature. But oftentimes the prevention of future conception is imperative, and in that event we should be able to accomplish this result.

A very important matter is some sure method of permanently closing the tubal canal in the stump of the Fallopian tube. It has been thought that closure of the peritoneum over the end of the stump would be sufficient, but it cannot always be done satisfactorily. The best method seems to be the removal of the Fallopian tube well into the uterine tissue by sharp-pointed scissors and carefully suturing the wound in the uterus thus made. It completely closes over the end of the very small part of the tube remaining next the endometrium, and, as it

¹ See also JOURNAL for July, p. 57.

brings muscular tissue over its end and the peritoneum together still over this, it would seem to be a sure method of permanently closing this small canal.

DR. HENRY D. FRY said the profession was not surprised when cases were first reported of pregnancy and childbirth following removal of the tubes and ovaries. It is not difficult to understand how a fragment of ovarian tissue might be left, which would continue to give off ripe ova, but it was not so clear how it became impregnated or how it reached the uterine cavity, after or before impregnation, when the tubes had become ligated and cut. The observations reported by Dr. Bovée were particularly interesting, and the information gained by these second operations showed conclusively that the ligatures had been absorbed and the tubes reopened. Dr. Fry had tied the tubes in a case of Cesarean section for preventing subsequent pregnancies, and now felt more than ever interested in the result. It had now been five years and there had been no conception. In some cases the explanation might be, as suggested by the essayist, that the ligature cut through the Fallopian tube and merely constricted the underlying tissues. Dr. Arthur Johnston says tubes may be found with supernumerary ostia; in one case he found five. One or more of these might be patulous between the ligature and the uterus, and in that way give passage to the ovum. Dr. Fry asked Dr. Bovée what kind of ligature had been used in these cases he reported.

DR. BOVÉE replied, silk.

DR. FRY further said that in performing abdominal section upon patients who had been operated upon before, he never found the ligature of the first operation. He wished to correct an error in Dr. Bovée's report of Dr. Sutton's cases. Both tubes were not separated by cautery. The right one was, but the cautery failed to act on the left side. Dr. Sutton further said that the tube was very much infiltrated, and he thought it possible that the ligature did not entirely constrict the lumen.

DR. I. S. STONE said the question under discussion was interesting, although it might be considered of but little practical importance. That enough cases of pregnancy following double salpingo-oophorectomy had occurred to add any great importance to the subject he very much doubted. Operators had often left a considerable portion of both ovary and tube, and in certain difficult cases, and would continue to do so. All operators of much experience would have occasionally to reopen the abdomen after their own or others' work. These cases often furnish interesting and important complications, but so far he had never found a third ovary, nor had he found any sufficient proof that such an organ exists. There are small bodies found attached to the ovary by a fold of peritoneum, which are apparently small, supernumerary ovaries. Dr. Lamb reports them unlike ovaries when their structure is microscopically examined. So far as the ligature is concerned, there can be no doubt but that many, or perhaps most, of the *en masse* ligatures cut through, and for two very good and sufficient

reasons. One is that the effort to permanently attach a uterine cornu to the pelvic wall outside the ovary with a ligature is futile; the strain is so great that it will cut through, especially if both sides are thus treated. Again, if the tube at the cornu is infected, when the ligature cuts through it must also become infected; when infected, it becomes a foreign body and will give us trouble in some way, as all of us so well know. The stump of the tube thus cut through will scarcely become covered with peritoneum, and it is quite possible that impregnation could occur in this way. Dr. Stone said he had reported his method of removing pus tubes without rupture at the Atlanta session of the American Medical Association in 1896. At that time he described his technique of salpingo-oöphorectomy and exhibited a drawing illustrating the exsection of the uterine cornua, which would absolutely prevent the further ingress of infection and also the possibility of impregnation.

DR. H. L. E. JOHNSON said that personally he had no knowledge of any cases in which the tubes had remained patulous after ligation. He had on one occasion to remove the second ovary from a patient within one year after he removed the first, and in this case he noted the closure and shrivelled condition of the tube at the site of the first operation. He had used silk in this ligation, but it had disappeared in some way. He said it was quite possible for the silk ligature to cut its way through after ligation, or the distal end of the tube to slough off or be absorbed and thus leave a patulous condition. Where the tube is septic, sloughing may take place and result in a subsequent patulous condition. He suggested that in all septic cases the distal end of the tube should be treated with pure carbolic acid or the actual cautery to destroy infective germs in the distal end. He mentioned a case from which he had removed both ovaries and tubes and which subsequently suffered every month from hemorrhage and dysmenorrhea. The explanation of the cause is not certain; he suggested there might have been in this case a supernumerary or third ovary—that is to say, there might have been some ovarian tissue located elsewhere by faulty development.

Referring to supernumerary openings of the tubes, he said he had had the pleasure of presenting such a specimen to this Society on a former occasion. He thought there were three or five openings in the tube presented.

DR. J. WESLEY BOVÉE said that he did not agree with Dr. Stone that the cornu of the uterus could not be attached to the stump of the broad ligament outside of the ovary, as he had occasionally done this for prolapse of the uterus in addition to utero-suspension. He had found it not only easy but advisable in many cases. He did not think it generally applicable for pedicle ligature after oöphoro-salpingectomy. He agreed that not so much tissue should be included in one ligature. He had opened the abdomen for secondary operations about forty times, and in but one did he find the pedicle ligature, and then on but one side. In this case the surgeon who had done the

first laparotomy had thought he had removed double pus tubes. He was present at Dr. Bovée's operation, and the ligature was found in the fimbriated end of the pus tube, which was removed from the abdomen and handed to him. An absorbable ligature is the only one for use in abdominal surgery ordinarily.

Meeting of March 18, 1898.

The President. T. C. SMITH, M.D., in the Chair.

DR. J. WESLEY BOVÉE showed a specimen of

SARCOMA OF THE UTERUS.

DR. H. L. E. JOHNSON reported a case of

VAGINAL HYSTERECTOMY FOR PROCIDENTIA.

On October 30, 1897, C. S., colored, æt. 65, was referred to me at the Central Dispensary and Emergency Hospital by Dr. Ida J. Heiberger, of the Woman's Clinic. The patient appears to have enjoyed good health until the birth of the seventh child, which presented breech and lacerated the cervix uteri. Menopause at her forty-ninth year; three years later excessive hemorrhage, lacerated cervix with ulceration simulating malignant disease, caused her to seek treatment, which she did at the Woman's Clinic in July of 1887. In November, 1887, she was operated upon at the Woman's Dispensary by my friend Dr. Joseph Taber Johnson for the relief of the lacerated cervix and perineum. In November, 1894, she returned to the Woman's Clinic seeking relief from excessive uterine hemorrhage. The uterus was a large, ulcerated mass which protruded through the vulva. After three months' treatment the cervix healed and hemorrhage ceased. In 1895 the trouble returned with complete procidentia, which was very much relieved after five months' treatment. On November 7, 1897, at the Central Dispensary and Emergency Hospital, I removed the uterus per vaginam, using clamp forceps on either broad ligament. In addition to the clamps I stitched the vagina and peritoneum posteriorly and the vagina anteriorly and posteriorly with six sutures. I thus combined the clamp and suture methods for the purpose of retaining the vagina upward and rendering it tense. The clamps were removed on November 10 and the sutures on the 15th. Case was discharged December 1. Dr. Heiberger examined the case yesterday (March 17, 1898) and reports the result excellent. The woman is attending to her duties as a house servant and claims to be perfectly well.

Strict asepsis was carried out before, during, and after operation, and as a result I have the pleasure of submitting what I consider a correspondingly good temperature chart. The highest point reached was 100.2°, which occurred on the third day, and thereafter steadily decreased to normal. There was no shock, and the patient made an uneventful convalescence.

I would suggest that this operation be more frequently performed for the relief of this extremely annoying condition, and I believe it will hold out a cure for the large number of women who are similarly affected and who have failed to secure relief from the various other operations devised.

DR. JOSEPH TABER JOHNSON said there was very little to discuss in the paper, but if the whole subject of vaginal hysterectomy were opened up a great deal might be said. A complete procidentia is a very deplorable thing. The bladder and rectum both come down and add to the size of the tumor outside of the pelvis. Operations narrowed down to two or three; vaginal hysterectomy and ventral suspension are the ones most used. The endeavor should be to do the greatest amount of good with the least possible harm. Ventral suspension is the operation most favored by surgeons. If the childbearing period is passed a hysterectomy will do. In some cases of procidentia in old women nothing short of a radical operation is of any benefit. There are a number of cases of vaginal hysterectomy on record not cured. *All* would be successful if a ventral fixation were done with a restoration of the perineum.

DR. I. S. STONE said the bearing of children ought not to influence the operation, for these women should not become pregnant. He said he had invented a new method as a substitute for ventral suspension, which will allow the uterus to come down, as it cannot resist the intra-abdominal pressure, which is the cause of the prolapse, even when the uterus is small. His method, he said, was to well denude the fundus of the uterus of peritoneum, and also the abdominal wall where the uterus is to be attached, and stitch the uterus to the abdominal wall, muscle to muscle. He also repairs the pelvic floor.

DR. J. WESLEY BOVÉE said Le Fort's operation is the best method of keeping the uterus up. Hysterorrhaphy allows it to come down, but he has never seen a case of Le Fort fail. He did not agree with Dr. Stone that any woman with procidentia should not bear children. The principal end to be gained was to have the uterus well fastened up; if to the abdominal wall, the round ligaments should be shortened. The operation described by Dr. Stone he thought not new. The parts had *frequently* been denuded down to muscle and fastened together. This operation does not do for childbearing patients, nor is it well to do an amputation of the cervix, as it is apt to cause sterility.

DR. I. S. STONE said the peritoneum had been scarified, but he had never seen the muscle fastened together.

DR. A. F. A. KING spoke of a new method of extirpating the uterus, described in THE AMERICAN JOURNAL OF OBSTETRICS, March, 1898.

DR. T. C. SMITH said that cases operated on after the method of the essayist were not always successful. Ventral fixation is the most successful operation. All the cases of the

best surgeons are not successful. whatever the method used. The speaker asked if we could not get better results by closing the vagina.

DR. W. P. CARR thought ventral fixation the best operation for the most cases. Patients with procidentia should be attended to earlier.

DR. H. L. E. JOHNSON said, in closing the discussion, that the Society had evidently misunderstood the technique of his operation. No other operator, as far as he knew, had removed the uterus as he had. His operation was a combination of the clamp and ligature methods. He applied the clamps as in the Polk operation, and, after the removal of the uterus, drew down the peritoneum and broad ligament posteriorly, to which he attached the posterior wall of the vagina; he then stitched the anterior vaginal wall to the broad ligament and the peritoneum anteriorly; he then stitched both vaginal walls together at the incision, leaving open a space for the clamps. The object of this is to give additional support to the vagina, and prevent, if possible, subsequent vaginal prolapse. He thought the peritoneum and broad-ligament stump would hold up the vagina until that organ underwent physiologic contraction or involution. For treatment. cases of procidentia uteri should be divided into two classes: first, those occurring before the menopause; and, secondly, those occurring after that period. His operation was intended for extreme cases after the menopause. From his personal observation all other operations for the relief of procidentia, including restoration of cervix and peritoneum, narrowing of the vagina, partial closure, and Le Fort's operation, had failed in their purpose. While he was at the Columbia Hospital, some years ago, he had assisted Dr. Murphy, the late surgeon in charge, in a half-dozen or more operations on the same patient, for relief of procidentia; but recently this patient had come under his observation with the uterus completely outside. He had years ago paid particular attention to plastic work while his friend Dr. J. Taber Johnson was devoting his attention to abdominal work. He spoke advisedly that his plastic work for other than procidentia had been satisfactory. He could not agree with Dr. T. C. Smith that it was good surgery to close the vaginal outlet for the relief of these cases, because those before the menopause required a functional outlet, and those afterward would sooner or later present a condition similar to that which he had two years ago described in an article published in the *Journal of the American Medical Association*, entitled "Atresia of the Uterine Canal after the Menopause." In either Dr. Smith would be closing a mucous-membrane cavity which would eventually become distended with mucus and exfoliated epithelium, and disastrous results would follow. He could not agree with Dr. Stone and others that ventral fixation is satisfactory treatment. The subsequent history of these operations is the formation of a band or ribbon of peritoneum, permitting the uterus eventually to go back to its old position. He did not consider ventral fixation a

good operation at all. He had recently treated a case so operated on by Dr. Stone. She subsequently suffered from bladder symptoms and considerable pain. An abscess or atresia of the uterine canal subsequently formed, requiring operation for evacuation of pus. This was done at the Central Dispensary Emergency Hospital in the presence of some of his associates. He did not understand why a uterus fixed anteriorly by operation should not cause disturbance of bladder and other functions, and produce pain and the same subjective symptoms which are produced by a uterus fixed or displaced posteriorly. Permanent fixation of the uterus in any position he considered abnormal; it certainly is not a physiological state. He knew of a case of complete procidentia, which was treated by Dr. Murphy at Columbia Hospital, which terminated unusually. Her husband had coitus directly into the womb. Pregnancy followed, and for at least some years afterward the procidentia did not return.

Procidentia is frequently caused by trauma of cervix, perineum, or vagina, or general subinvolution or displacement. During childbearing the conditions should be corrected, but after the menopause extreme cases should be treated by vaginal hysterectomy.

Meeting of April 15, 1898.

The President, T. C. SMITH, M.D., in the Chair.

DR. J. THOMAS KELLEY, JR., read the paper of the evening, entitled

VAGINISMUS.¹

DR. T. C. SMITH said a lady had come to him eighteen months ago, saying that she could not have sexual intercourse. He found a small vagina and an unruptured hymen. He cut off the hymen and stitched the vagina as wide as possible: she became pregnant in four months.

DR. J. T. JOHNSON reported a case in which the husband and wife were both anxious to have children. Touching the parts with a camel's-hair pencil would produce the symptoms. It was suggested that she be anesthetized and copulation take place while she was in that condition.

DR. H. L. E. JOHNSON said the paper referred to spasm during the sexual act. We should not confound this with ordinary dyspareunia from other causes. There may be disease of any of the sexual organs. His experience corresponded with the essayist's: they frequently do not return for treatment. He had seen several typical cases in which the spasm was brought on by the slightest touch. Hysteria is a potent factor.

¹ See original article, p. 529.

Meeting of May 6, 1898.

The President, T. C. SMITH, M.D., in the Chair.

DR J. WESLEY BOVÉE presented a specimen of

* TUBO-OVARIAN ABSCESS, AND PYOHEMATIC ACCUMULATION
IN TUBE AND OVARY OF THE OTHER SIDE,

removed from the same woman. The interesting features of the specimen were the exceedingly large size, each mass measuring over sixteen inches in circumference, and that both had been removed without rupture, although both communicated with the uterine cavity. One of the masses lay high in the pelvis, in fact out of the true pelvis, and when the patient was on the table for operation it resembled in appearance a large fibroid. The other extended from deep in the pelvis upward out of the true pelvis, but not to the level of the first. Both were badly adherent and were removed by clamping first the tube and ovarian ligament at the uterine cornu with two forceps about half an inch apart and cutting between; then by gentle traction on the forceps attached to the distal side of the incision, and, working the fingers around under the mass, the broad ligament outside of the ovary was reached and clamped. Just inside of this clamp the top of the ligament was severed and the remainder of the adhesions separated. Then by the scissors the removal of the tubo-ovarian sac intact was easily accomplished. The same procedure was followed on the other side with similar success. Both tube stumps were now removed entire from the uterine cornua and the wounds closed with continuous catgut. All material for the base operation was catgut. The patient made the happiest possible convalescence, never complaining of pain after the first twenty-four hours.

He presented also a

LARGE FIBROID OF THE UTERUS

he had removed a few days before from a woman sent to him for operation from Nebraska. She had had an attempt made at removal of the tumor five years ago, when she was but 22 years of age, but after opening the abdomen the operation was abandoned, and as a result she had, when she presented herself, a large ventral hernia. The abdomen seemed to be practically full of fibroids, extending to the diaphragm and very deep in the pelvis. A scar from umbilicus to pubes indicated the former line of incision. At the operation it was found necessary to make an incision from pubes to within two inches of the sternum, and the adhesions of omentum in the hernial sac and of intestine and omentum along the former incision were separated with difficulty. The fibroid mass was delivered, after considerable difficulty in locating the appendages, both of which were greatly elongated, adherent, and degenerated. In the

right ovary was a blood cyst containing about three ounces, that was ruptured in removal. The left appendage was only reached after removal of the uterus, mass of fibroids, and the right appendage. It, too, was badly degenerated. The adhesions to the appendages were so dense as to be with the greatest difficulty separated in some parts, and in others only by the use of scissors. A modified Baer operation was done with catgut and the wound closed completely. She has made an excellent recovery.

DR. I. S. STONE read the paper of the evening, entitled

EMMET'S OPERATION FOR LACERATED PERINEUM AND
RELAXED VAGINAL OUTLET.¹

DR. J. T. JOHNSON opened the discussion. The essayist, he thought, had said too much about men failing to recognize the condition of relaxed vaginal outlet, though, he said, if all physicians would take more pains in examination, so many patients would not go to other cities for an opinion. We owe it to the patient to take all possible pains. If we put our patients in the proper position and loosen their clothing it is not necessary to administer an anesthetic.

He had heard men say who had practised for forty years they had never had a ruptured perineum, and frequently many of us are negligent in examining our patients after confinement. After a certain time symptoms should tell of the condition, even without an examination. In Emmet's description of a relaxed vaginal outlet the perineal body has very little to do with it. All of us have seen cases of no apparent tear, but when the patient is in position it is very evident. Frequently everything but the mucous membrane of the rectum and vaginal wall is torn through and there result a rectocele and cystocele. He had no criticism to make of the paper; it is most excellent. The essayist draws attention to Emmet's operation. Agnew's does no good. Tait's also is of very little use, as he has done nothing to the levator ani muscle. Emmet brings up the pelvic floor, and the condition is as good or better than it was originally. In the description in Kelly's new book, the tongue left in the centre is pulled down further and the floor not elevated so high as in Emmet's. The speaker drew special attention to the fact that there may be apparently a good result, but if the ends of the sphincter ani are not brought well together the result is far from perfect. It is not necessary or proper to put the finger in the rectum, as it is apt to infect the wound: but in a fresh tear it is good practice, as the floor can be lifted up and more tissue included in the suture. He adopted the rule to tell every confinement patient that she was not discharged for six weeks after the child is born, when he examined her for relaxed vaginal outlet or any other condition incident to labor.

¹ See original article, p. 524.

DR. J. WESLEY BOVÉE was not willing to admit all that was said for the Emmet operation. Tait's is a better operation if the tear is near the surface. If it is well up in the sulci Emmet's is to be preferred, but if it is not high or transverse the Tait is best, and it cannot be said of it that it only makes a skin perineum. In old complete tears of ten or twelve years' standing there is very little muscle left, and you have to be satisfied if you get the fascia together. Emmet's falls short where the tear is in the median line. The best for this class of cases is Andrews', of Chicago. A small, triangular portion of vaginal mucous membrane is denuded; the finger is then inserted between the vaginal and rectal tissue to one side of the median line and pushed up to the cervix. This is repeated on the other side; the separated vaginal tissue is then cut out with scissors, leaving a tongue of tissue in the median line from the cervix to the original denudation at the perineum. A suture is introduced at the cervical end of this tongue, and, following along down on one side, passes at the perineal end and up on the other side, emerging at the cervix. This is drawn tight, lifting the whole vaginal floor high up toward the cervix and straightening the whole recto-vaginal wall. This not only cures the rectocele, but assists in keeping in position any retro-displacement of the uterus. The rectum can be made clean, and by passing a pledget of antiseptic cotton above there is no danger of infecting the wound by a finger in the rectum.

REVIEWS.

OPERATIVE GYNECOLOGY. By HOWARD A. KELLY, A.B., M.D., Fellow of the American Gynecological Society; Professor of Gynecology and Obstetrics in the Johns Hopkins University, and Gynecologist and Obstetrician to the Johns Hopkins Hospital, Baltimore; formerly Associate Professor of Obstetrics in the University of Pennsylvania; Corresponding Member of the Société Obstétricale et Gynécologique de Paris and of the Gesellschaft für Geburtshülfe zu Leipzig. In two volumes, with 24 plates and 590 original illustrations. Pp. 1112. New York: D. Appleton & Co., 1898.

This is a work that must be seen to be appreciated, for its examination almost disarms criticism and makes praise seem inadequate. It is remarkable for the clearness and simplicity of its style, the straightforwardness of its teaching, the richness of its clinical material, and the wonderful beauty and accuracy of its many illustrations. The author, the artist, and the printer are all to be congratulated in that they have set the mark so high.

In the preface is written: "Gynecology is so young a science, and many of its surgical procedures are as yet so

incompletely developed, that I think the best service a gynecologist can render his specialty is to record accurately his own experience." In accordance with this idea the scope of the work is strictly limited, and it becomes, not a complete system of operative gynecology, but a mirror of the author's own methods. He does not describe all important operations, but gives under each head a summary of that one only that he has found best in his own practice. Thus, for instance, the clamp methods of vaginal hysterectomy and the vaginal enucleation of pus tubes, both procedures that have numerous partisans, are not mentioned. To those who know of Dr. Kelly, his brilliant researches, mature judgment, and skilful work at the Johns Hopkins, this limitation will not be a fault, but the best of reasons why the book should be read.

The first volume begins with very practical chapters on bacteriology, sepsis, antiseptis, and asepsis, in hospitals and in private work, and then takes up the topographical anatomy of the pelvic organs in a chapter that presents a very remarkable series of illustrations and gives an idea so clear and accurate that it alone seems worth the price of the book. Then follow chapters on the gynecological examination; instruments and dressings; anesthesia; general principles involved in plastic operations; disease of the external genitals; rupture of the recto-vaginal septum and relaxed vaginal outlet, in which an operation essentially like that of Emmet is the one favored and described; operations on the vagina; affections of the urethra, bladder, and ureters. a subject which the special investigations and unique experience of the author have enabled him to present in a manner practically new; dilatation and curettage and repair of the torn cervix; prolapse of the uterus; vaginal hysterectomy by ligature; inversion of the uterus; vaginal extirpation of submucous myomata; and the uterus as a retention cyst.

The second volume is devoted entirely to abdominal surgery, and opens with most admirable chapters on the general principles and complications common to abdominal operations, the care of the wound and the patient, and the complications arising from abdominal operations. Then, after the consideration of tubercular peritonitis, come sections on suspension of the uterus and conservative operations on the tubes and ovaries, both subjects in which the well-known investigations of the author give his conclusions especial interest and weight. Salpingo-oöphorectomy, vaginal drainage for pus cases, hysterectomy with extirpation of ovaries and tubes and ovariectomy, fill the next hundred pages; and then comes the radical abdominal hysterectomy as perfected at the Johns Hopkins by Clark, and the operations for the removal of myoma, myomectomy being given especial prominence. Operations during pregnancy; Cesarean section; extrauterine pregnancy; the radical cure of hernia; intestinal complications, and the more remote results of abdominal operations, take one to the concluding chapter on autopsies and the preservation of tissues for microscopical exam-

ination, and one lays down the book feeling sorry that there is not just a little more of it.

Harking far back into the mists of the past we hear in the Charmides of Plato the voice of the philosopher Socrates: "And this is the reason why the cure of many diseases is unknown to the physicians of Hellas—because they are ignorant of the whole, which ought to be studied also; for the part can never be well unless the whole is well." The wisdom of this seems axiomatic, its truth beyond question, and yet it is so often forgotten that Dr. Kelly has done well in placing it on the fly-leaf of his first volume as a gentle reminder to his readers of the dangers of a half-grown and unripe specialism.

MEDICAL AND SURGICAL TREATISE ON GYNECOLOGY ("Traité médico-chirurgical de Gynécologie"). By F. LABADIE LAGRAVE, M.D., Médecin de la Charité, and FÉLIX LEGUEU, Chirurgien des Hôpitaux. One volume 8vo of 1,250 pages, with 270 illustrations. Paris: Félix Alcan, 1898.

This is an excellent work. There is enough historical, anatomical, therapeutical material to make the beginner in gynecological practice familiar with everything worth knowing, and, on the other side, the book is so perfectly up-to-date that the advanced gynecologist will read it with interest and advantage.

Two hundred and nineteen pages of the book are devoted to the medical aspect of gynecology. Gynecology has developed too exclusively as a branch of surgery; most recent text books give us nothing but a more or less minute description of surgical operations. Another highly commendable feature is the fact that the material has not been divided among half a dozen writers, but aside from the medical part, written by Dr. Labadie, the rest of the book is the work of one man, Dr. Legueu. In the first part of the work are treated symptomatology, diagnosis, and general therapeutics. The classification of the second part is based on the etiological principle. This is an agreeable deviation from the usual routine practice of text books, and is carried through admirably. Instead of taking up the single genital organs of the woman one by one and describing their affections, the author treats the different organs successively under the head of the etiological factors which cause disease. Thus the first chapter is devoted to congenital malformations; the next to traumatic lesions; the third to acquired deformities, treating the sequelæ of lacerations of perineum and urinary and stercoral fistula, etc. Displacements take another chapter. Chapter V. is devoted to nervous affections of the genital organs.

As may be expected from the scientific classification of the material, special care and attention has been bestowed upon the description of pathological conditions. Many very good drawings, among them not a few original with the author, illustrate the text, and the general make-up of the book is good.

H. K.

TRANSACTIONS OF THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS. Vol. X. For the year 1897. Philadelphia: William J. Dornan, 1898.

This book contains a number of interesting papers, among which are: "Appendicitis in Relation to Diseases of the Uterine Adnexa and Pregnancy," by Dr. John B. Deaver; "Tonic and Spasmodic Intestinal Contractions," by Dr. X. O. Werder; "Cysts of the Urachus," by Dr. R. Douglas; "Senile Irritable Uterus," by Dr. T. J. Maxwell; "The Fate of Ovaries in Connection with Retroversion and Retroflexion of the Uterus," by Dr. A. Goldspohn, etc. Some of the papers are well illustrated, especially Dr. J. A. Lyons' paper on "Incubators and Milk Laboratory Feeding."

TRANSACTIONS OF THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION. Vol. X. Published by the Association, 1898.

This volume of nearly four hundred pages contains a number of excellent papers, followed by thorough and able discussions, upon a variety of subjects. Dr. A. V. L. Brokaw presents an Exhibition of Radiographs, in which there are thirty-five reproductions, perhaps the best one among which shows the arteries of a child injected with mercury. Dr. W. H. Myers contributes an important paper on "The Early Diagnosis and Treatment of Cancer of the Uterus." Several of the papers are accompanied by very good plates.

BRIEF OF CURRENT LITERATURE.

Extrauterine Pregnancy.—This concludes the monograph of John W. Taylor, the first part of which was abstracted in the July JOURNAL.

Diagnosis.—When extrauterine pregnancy is present and has by its symptoms driven the patient to seek for advice, at every stage—up to "term" with death of the fetus—there are certain indications to be derived from history, symptoms, and physical signs which are sufficient in most cases to establish a correct diagnosis.

Our first consideration will be the diagnosis of a case of earliest rupture of the tube with diffuse hemorrhage. The patient is probably a married woman, and one who of course must necessarily be within the limits of the childbearing period. She has probably been in perfect health until an hour or so ago. She was then suddenly seized with a pain in the abdomen, "as if something had given way inside her." She became faint and collapsed, was sick and lay down upon the couch or was assisted to her bed. She was given a little stimulant and for a few minutes felt perhaps slightly better. On

reflection the attack did not altogether surprise her. Her proper menstrual period was due last week, but instead of coming on as usual was delayed for some days (an uncommon occurrence for her), and during the last three or four days, although there has been some discharge of blood from the vagina, which for an hour this morning was quite profuse, the period has not come on "properly" or in a customary manner. Such, or something like it, is the history. On glancing at the patient the observant practitioner will probably notice at once the paleness of her countenance and lips and her seriously "passive" expression. This can only arise from simple faintness with but little or no loss of blood or from active hemorrhage. The pulse will decide it. If from simple faintness, although it may be temporarily lost or difficult to find, the pulse when felt again will be found to be slow and moderately full, while if hemorrhage be still in progress the pulse increases in frequency as the hemorrhage proceeds and after a time becomes perceptibly weaker. Perhaps the normal pulse rate is known, and if so it will be found that it is twenty or thirty or forty beats in the minute faster than is usual and that the ratio is still increasing. This is obviously not due to nervousness or excitement, for the patient is curiously self-contained and quiet. Every now and then the pulse becomes fluttering and difficult to count, and at these times there is usually some nausea and vomiting. Between these periods of extra-faintness it may temporarily improve in quality, but its rapidity does not diminish so long as the bleeding is unchecked. The temperature is subnormal. If the hemorrhage continue unabated a colder grayness slowly creeps over the countenance, the voice becomes feeble, the sight is dimmed, the fingers become white and rather cold, and the patient now speaks but little or only in answer to direct questions. Still, however, the mind remains clear and the patient is often acutely observant of all that passes around her. It is needless to try to trace the symptoms any further—the patient is dying, and if anything is to be done to save her life it must be done at once.

In some of the worst cases there are no pelvic or abdominal signs of any definite importance or certainty. The hemorrhage may come from a very little swelling near the cornu of the uterus, and if the latter be inclined to retrovert the tubal swelling may be inaccessible. The blood is fluid; it is continually pouring or dribbling into the abdomen, and the patient never has vitality enough for any kind of inflammatory reaction. In addition the patient may be stout, the abdominal parietes thick, and a satisfactory bimanual examination be altogether impossible. Then, without any sign directly pointing to the tube, the symptoms of internal bleeding must be our ground for action. Fortunately, however, in the majority of cases there is additional, and sometimes abundant, evidence to be obtained by careful examination. Sometimes a tumor is to be distinctly felt at one side of the uterus; sometimes a "decidua" has been passed per vaginam; usually the pouch of Douglas may be felt

distended by blood clot, the sensation of an ill-defined but full and boggy swelling being communicated to the finger of the examiner. There may be absolute fluctuation of the blood through the abdominal walls before opening the abdomen, and other indications of blood in the abdomen may be elicited by percussion—dulness in the flanks very slowly changing with changes of position—while in all cases which survive the first few hours and in which the bleeding is temporarily checked there is difficulty in the passage of flatus and motion; the patient suffers from considerable abdominal pain, and, in short, the signs are present of peritonitis as well as those of recent hemorrhage. In these cases it is but very rarely (if ever) that any evidence pointing to pregnancy is to be obtained from the condition of the breasts or areolæ or from the sensations of the patient. These are always feeble and more often wanting in the early stages of extrauterine pregnancy, and any search for them with reliance on their importance will probably increase doubt at a time when certainty and action are of the utmost value.

Now as to differential diagnosis: In a case of early rupture with diffuse hemorrhage the symptoms are so notably sudden and instant in their origin that there is but small danger of any other affection being suspected save those of similar acuteness. To one unversed in gynecological disease the idea of poisoning is apt to come uppermost. Gastric or intestinal perforation from ulcer of the stomach or acute appendicitis may also be suspected. In all of these there may be the same sudden onset, but, except as a curious and improbable coincidence, there would not be the contemporaneous presence of an irregular blood discharge from the vagina, and the history, however poor, of some delay in the appearance of the period. In all of these, too, the immediate pain and distress are much more violent than in hemorrhage, while in gastric perforation (which usually occurs in young unmarried women) and in acute appendicitis there are antecedent symptoms or attacks which point to the stomach or the appendix as the source of trouble. As a matter of fact, the question of these diseases has occurred to those concerned rather as postmortem doubts and fancies after the patient has died than as serious diagnostic difficulties during life. The chief danger of the practitioner is to underestimate the importance of the condition before him.

Our next consideration is the diagnosis of an unruptured tubal pregnancy, of tubal mole, and of peritubal hemocele. In the preceding section, when dealing with early rupture and diffuse hemorrhage, we found that of the three chief factors which go to form the diagnosis, the symptoms—symptoms of internal abdominal bleeding—were on the whole the most reliable, that the history was of next importance, and that the physical signs of any tumor (although of the utmost value when present) were uncertain and might be practically wanting. As we proceed with our subject and discuss later and still later developments of extrauterine pregnancy, we shall find

both history and physical signs increasing in value, and it is to these, therefore, that we shall mainly direct our attention; but at all the stages referred to (except the very latest) diffuse internal hemorrhage may intervene and add its special signs and symptoms to those already present.

• The previous history of the patient—the history before the pregnancy begins—is of some importance. There is a certain amount of well-being of the genital organs which is probably necessary for conception to take place, and in any case of pregnancy, whether uterine or extrauterine, the patient has usually been moderately well and free from any marked pelvic trouble immediately before the act of impregnation. This period of ante-pregnant or ante-amenorrheal well-being, which is of little or no importance in normal pregnancy, is worthy of special attention when there is a possibility of misplaced pregnancy, because the tumors with which this is liable to be confounded have usually some history of illness rather than of health immediately preceding their formation. Again, in rather more than half the number of cases of extrauterine pregnancy several years have elapsed since the last normal pregnancy took place, and although the absence of this interval is of no diagnostic significance, its presence in a suspicious case may be held as slightly increasing that suspicion and as being in accordance with the history of other recorded cases.

It is obvious that as the duration of the pregnancy increases, so must its history be traceable for longer and still longer measures of time, and the chief sign which marks this is the absence of the normal menstrual period—not necessarily the absence of all sanguinolent discharge, but the absence of the normal period in its usual course. Some critical discrimination is often needed in order to arrive at a just conclusion on this point. For instance, in tubal mole there is often no definite history of amenorrhea—that is, the patient has never gone “over her time” without vaginal loss, and if carelessly questioned such a patient will probably answer that she has been “regular” throughout, but that the present period is unusually protracted. On closer inquiry we may, however, probably elicit the fact that the hemorrhage which has been taking place during the last three or four weeks is very different in character from that of a normal menstrual period, and the patient has no difficulty in fixing a date some seven or eight weeks previously when she was last “properly unwell.” The blood is almost invariably dark in color, moderate in amount, thickish in its consistence, and steady in its rate of flow. Gushes of bright red blood occur occasionally, but are quite exceptional. If we add to this that the hemorrhage is very persistent and that it may carry with it some shreds or portions of decidual membrane, all its special features have been noticed. Apart from the presence of decidua, the most practical point is the contrast often afforded by this bleeding to the normal bleeding of the menstrual period in the same individual. The type of menstruation often varies but little for years together, and it is very rare that an intelli-

gent patient is unable to detect the difference. Amenorrhea, then, together with or followed by persistent, dark-colored uterine bleeding of moderate amount, is almost always met with. The hemorrhage is usually due to some separation of decidual membrane from the interior of the uterus, and is, moreover, a sign that the vitality of the pregnancy is endangered or destroyed. So long as the pregnancy—although out of place—is growing and uninjured, there is, as a rule, no uterine bleeding. If the decidua be shed it does not follow that the bleeding ceases. Hemorrhage continues from the interior of the uterus while the abortive pregnancy remains as a source of irritation within the tube, and in some cases, at least, the hemorrhage comes directly from the tube—the tube containing the mole of pregnancy—bleeding alike into the uterus by its open uterine end and into the pelvis by its open fimbriated end.

We now pass to the physical signs elicited by examination of the patient. One of the earliest and most marked phenomena is the increased vascularity of the parts affected. There is a sign, a very constant and valuable one, accompanying this—the presence of pulsating vessels in the vaginal vault on the affected side. All the branches of the uterine artery are subject to very marked enlargement on the side of the pregnancy. It is often easy to touch a vessel the “pulse” of which is very comparable to that of the radial, and, although inflammatory affections may sometimes give rise to very similar hyperemia, the pulsation of the vessels is rarely so marked and so easy to elicit as in tubal pregnancy.

The next point is the finding of the extrauterine tumor. If we turn to the sequence used when describing tubal mole and peritubal hematocele, we shall at once recognize the leading features to be determined (if possible) by vaginal and bimanual examination. There is the tubal tumor caused by the misplaced pregnancy, its size, shape, position, and mobility, and there is the displacement (if any) of the pelvic viscera caused by its growth. When hematocele forms there may be the opportunity, perhaps, of following the alteration in the tumor produced by hemorrhage, in watching the change from mobility to fixation, the rapid lateral and upward growth of the blood mass, and the change from the insensitive little tubal tumor of the healthy and unruptured pregnancy to the acutely tender and extending hematocele. For at first, when the pregnancy forms within the tube, there is no pain or tenderness, and it is only by accidental good fortune that the opportunity arises for an examination under these conditions.

Later, if bleeding occurs within the tube, its enlargement is not limited to the site of pregnancy, but the whole of the tube becomes distended, and this is the stage when the diagnosis of the tumor is attended with least difficulty. The tube is not only distended but hard, its sinuous curves are easily followed, its tubal or “sausage-shaped” character is readily ascertained, and if the hemorrhage be limited to the interior of the tube and no blood as yet has invaded the peritoneal cavity, there is

still but little or no tenderness and a full examination may be made without difficulty or pain.

Sometimes the pregnant tube is altogether on one side of the uterus, the pouch of Douglas being quite empty; and when the uterus is much retroflexed the tumor may even be found in the front half of the pelvis, the pregnancy lying altogether anterior to the uterus. In this situation the tumor is very accessible to bimanual examination, provided the bladder be empty.

It might easily be supposed that, as hemorrhage took place into the pelvis and the original distension of the tube was supplemented by the formation of a hemothecle, so the resulting tumor would become increasingly prominent and more easy of diagnosis. But it is not so. With every bleeding into the peritoneal cavity there is pain, there is some collapse, and there is abdominal tenderness persisting for many days. The slightest pressure is objected to, the abdominal muscles are contracted, deep palpation is impossible, and any attempt at bimanual examination is apt to be most unsatisfactory. Furthermore, it will often be found on vaginal touch that the clearly-defined outlines of the tube are obscured or even lost in the swelling of the hemothecle. There is evidently a tumor present, and it appears to be connected with the Fallopian tube, but its upper limit cannot be palpated from the abdomen and its exact size and boundaries are uncertain. Here the displacement of the uterus, if definite and permanent, will afford valuable evidence as to the size of the swelling which causes the displacement. A little later, if the hemorrhage is repeated and the hemothecle increases, we find the upper limit of the swelling appearing above the pubes. In spite of the pain and abdominal distension there is then no difficulty in ascertaining the full extent of the tumor. Above one groin we usually find the convex outline of the mass arising from below. It is lateral, fixed, tender, and bulging. The convex upper border of the mass is well marked. It is sometimes visible, it can be felt on gentle palpation, and tends to extend in an increasing curve toward the umbilicus. Below this line the percussion note is dull; above it, the adherent and probably distended intestine marks a clearly defined area of resonance. This applies to the central portion of the curve; each end of it shades off into inaccessible regions—on the one side toward the loin of the affected side, on the other beneath the pubes. Examined bimanually the abdominal mass above the groin is felt to be one with the tubal tumor in the pelvis, and the displacement of the uterus to the non-affected side (which is now extreme) is marked and unmistakable. This tumor, which is usually characteristic of the advanced development of intraperitoneal hemothecle the result of bleeding from the unruptured tube, and which then is produced somewhat slowly or after repeated hemorrhages, may also be more suddenly formed by later rupture of the tube; and, so far as physical signs are concerned, there is no essential difference in the resulting hemothecles. The same description will accordingly apply to both formations.

Very similar, too, is the tumor formed by an intraligamentary pregnancy about the fourth month when the pregnancy is of the anterior or subperitoneo-pelvic variety. There is no difference, except that the uterus is liable to be raised as well as displaced to the opposite side by the growing pregnancy, and that in this case one is more liable to meet with the signs of a fixed iliac tumor growing into the abdomen above the groin without any symptoms of internal hemorrhage, because under these circumstances the pregnancy may be uninterrupted by accidental changes. Frequently, however, disturbances do arise, and then no differential diagnosis between the two hematoceles is possible until the abdomen is opened.

The only other tumor needing consideration at this stage is that of the typical retrouterine hematocele when the pouch of Douglas is acutely distended, its opening above into the peritoneal cavity being temporarily occluded. The condition occurs but rarely as the result of tubal bleeding, but when it does take place the signs, both abdominal and pelvic, are very different from those already described.

The next point is the determination of the size, position, and contents (if any) of the uterus. The uterus is nearly always slightly enlarged, the enlargement bearing a strong resemblance to that of the subinvolved uterus after confinement and having but little in common with the broad and succulent enlargement of the pregnant organ. It is slightly thicker and longer than normal, as a bleeding uterus generally is, but the cervix is not specially soft and yielding, and if this be followed up by the finger beyond the vaginal reflexion and the tumor of the extrauterine pregnancy or hematocele be encountered in its (close) relation to the uterus somewhere in the pelvis, the cervix may often be followed beyond and above the lower limit of the tumor, and the uterus may be felt something like a finger fixed to one side of the tumor. We have already traced the early tendency of the uterus toward retroflexion and its later displacement to one side of the pelvis. Generally with the larger hematoceles produced by recurrent bleedings, and always in true retrouterine hematocele, which we have just been considering, the uterus is strongly displaced forward. When the pouch of Douglas is excessively distended it may also be carried upward so that the cervix is difficult to reach. The exact position of the fundus and the emptiness or non-pregnant state of its cavity are very important, and sometimes very difficult points to determine, but they must be decisively settled before any operation is undertaken. On careful bimanual examination, if the supravaginal cervix has been traced upward by the examining finger from below, the direction of the uterus is followed as far as possible and the probable situation of the fundus—toward the front or the side of the pelvis—is definitely determined. Then, if the hand on the outside of the abdomen be carried to this point in spite of the larger displacing tumor of the pregnancy, the fingers of the outside hand may often be gently pressed down on the summit of the fundus

and the whole of the uterus may be accurately mapped out (bimanually) by the fingers. Sometimes the conditions—the coexistence of peritonitis and abdominal distension—make such examination an utter impossibility, and then it may not only be allowable but necessary to pass the uterine sound in order to come to a certain conclusion. Both the passage of the sound and rectal examination should, however, be left to the discretion and use of the operating surgeon. All other reasonable methods for determining the condition of the uterus should have been previously used, and the same delicate gauging of the probable position of the fundus and direction of its cavity as that already described should precede the final determination of the curve of the sound and of the passage of its tip within the external os.

We have now to consider the symptoms which accompany intraperitoneal bleeding and hematocele. Some have been incidentally referred to, such as abdominal pain and tenderness, distension, and rigidity of the abdominal muscles. The characteristic feature of these symptoms, as also of the collapse and faintness and vomiting generally accompanying them, is that they come on suddenly, because they are directly due to the bleeding, and if the bleeding be slight or moderate they rather quickly diminish in intensity or entirely disappear. For instance, a patient suffering in this way may feel perfectly well all day, be attacked with sudden violent pain at 11 P.M., feel seriously ill for half the night, have a good sleep toward morning, and be attending to her usual household duties in the course of the following day. These attacks, in the same way as the bleeding which we have studied before, are almost inevitably recurrent, so that in a large number of cases treated by operation we have a clear history of three or four attacks before the abdomen is opened. The suddenness of these attacks is very frequently surprising to the patient herself. Vomiting very generally accompanies the attacks, but is not persistent. At first the patient usually speaks of the pain as being all over the abdomen, but when questioned can generally differentiate one side as being more painful than the other. If the bleeding increases, and always if the hematocele extends above the groin into the abdomen or really fills and distends the pouch of Douglas, the condition of the patient becomes permanently serious; she is confined to her bed with abdominal pain and tenderness. She is, as a rule, visibly anemic from the loss of blood; there is either present or there is the clear history of some acute peritonitis following the last attack. The pulse is quick and feeble—probably 120 or more. There may be considerable pyrexia, the temperature rising to from 100° to 103° F., and in a certain proportion of cases there is slight but decided albuminuria. This last symptom appears in some way to be directly due to the blood effusion. The pyrexia in intra-abdominal hematocele is probably due to reabsorption of blood and need not be regarded as septic. When the peritoneum has been lifted from the rectum, or the pouch

of Douglas is shut off from the rest of the peritoneal cavity and this is acutely distended with blood, the pyrexia which slowly comes on is of quite a different character. The proximity of the rectum, the anterior coat of which is stretched and thin or the serous covering of which may be defective, favors the passage of septic matter from the bowel into the hematocele; decomposition of the blood generally occurs, and the temperature may rise to 104° or 105° . The iliac hematocele or the pouch of Douglas becomes further distended by inflammatory effusion, and all the symptoms of septic absorption are probably present. Apart from this condition, the chief value of the symptoms is as a measure of the importance and severity of the internal bleeding. The anemia, the faintness, the collapse, the vomiting, the abdominal pain, and the peritonitis will vary in direct ratio to the bleeding. If such symptoms are produced slowly they point to tubal mole with increasing hemorrhage from the unruptured tube. If, on the other hand, they are produced suddenly, they point to later rupture of the tube.

With this we complete the consideration of all the elements which go to form a positive diagnosis of extrauterine pregnancy before and during those disturbances to its progress which are so common in the earlier months—the disturbance of intraperitoneal bleeding and hematocele formation. Let us briefly recapitulate them: We have a patient within the child-bearing limits of age, and one in whom a pregnancy is possible; she has recently been in good health; it is more likely than not that several years have passed since her last pregnancy; there is a history of some amenorrhea accompanied or followed by irregular uterine hemorrhage, dark in color, moderate in amount, and persistent in its course; with this there may be the history of the passage of some membrane, either in one pouch or bag as a “complete decidua,” or in two pieces, or in shreds; on examination pulsating vessels may be felt in the vaginal vault on one side of the uterus; on this side also, and closely investing the back of the uterus, there is nearly always a tubal tumor (exceptionally this may have a different or curious situation); this tumor enlarges markedly and suddenly by recurrent hemorrhages and by the formation of a hematocele directly continuous with the original tubal tumor; these hemorrhages are signalized by sudden spasms of severe abdominal pain and by transient attacks of peritonitis; the uterus is displaced by the hematocele at first backward, afterward to the opposite side of the pelvis, and sometimes forward (against the pubes) (it is very rarely that the uterus is permanently displaced downward); and the uterus throughout, although slightly enlarged, may be proved to be empty.

The differential diagnosis still remains for us to consider. Extrauterine pregnancy may be mistaken for: pyosalpinx with amenorrhea; myoma; simple abortion; retroflexion of the gravid uterus; antelexion of the gravid uterus; and twisted-pedicle tumors—(a) of the tube and (b) of the ovary.

1. Pyosalpinx is usually accompanied by regular menstrua-

tion, menorrhagia, or metrorrhagia. Every now and then, however, in double pyosalpinx (when the ovaries have probably been rendered temporarily functionless by dense enveloping adhesions) there is total amenorrhea of from two to three or four months' standing, and then the symptoms and signs may be almost identical in the two conditions. The pyosalpinx will afford us a typical tubal tumor, and when both sides are affected the tube of the one side is nearly always very much more distended than that of the other, so that the main tumor is one-sided. The inflammatory thickening and adhesions closely surrounding the tube may simulate a hematocele. A pinhole perforation of the distended tube may cause abdominal pain, collapse, vomiting, and a consequent attack of peritonitis; and, in short, there may be nothing but the history to guide us to a wise and correct diagnosis. Here the immediately preceding health or ill-health of the patient becomes a point of high importance. If the pyosalpinx be quite recent there will still be the history of purulent vaginal discharge preceding the pelvic inflammation; while if, as is more probable, the pyosalpinx be an acute recrudescence of an old affection, the patient may confess to some similar attack two, three, or four years previously, and to some tenderness or aching in one side during all these years.

2. The likeness to myoma is most marked when a tubal hematocele, not quite recent and hard from coagulation of the blood contained in it, is firmly fixed on one side of the uterus and is free from all other connections. Then, if the observer's mind be fixed on the condition of the uterus as a cause for continued uterine hemorrhage, and if on bimanual examination he can thoroughly palpate a globular, immovable "boss," not specially tender, on one side of the fundus uteri, he may easily imagine the case to be a clear one of myoma.

3. An extrauterine pregnancy which has resulted in tubal mole and hematocele may easily be regarded as a simple abortion by any one who depends entirely on symptoms, for these may be very similar in both affections, the peritonitic pains of the one being closely simulated by the painful uterine cramps of the other. On vaginal examination, however, the two conditions are at once differentiated, or the "abortion" is shown to be no simple one by the presence of a tumor outside the uterus. When the conditions are unfavorable for full examination, or when there are any grounds for supposing that a tumor may be present but inaccessible, great caution is needed. The interference that would be right in incomplete abortion may be very harmful when the main source of irritation is outside the uterus.

4. Retroflexion of the gravid uterus has been recognized by most authors as a condition needing careful differentiation from extrauterine pregnancy, because unfortunate cases have been recorded in which a distended tube in Douglas' pouch has been supposed to be the pregnant retroverted fundus, and an injudicious attempt at its replacement (?) has ruptured the

tubal sac and hastened the death of the patient. When one knows this and recognizes the danger of any interference before a certain diagnosis is formed, it will be found excessively rare or impossible for any similar mistake to recur. The position of the fundus must be ascertained by careful bimanual examination; its presence or its absence in front of the tumor must be satisfactorily determined. When there is any tumor other than the fundus filling the pouch of Douglas, the whole of the uterus (generally quite straight) is pushed against the pubes; the cervix is looking directly downward; and if the bladder be empty the fundus may be felt on gentle pressure immediately above the pubes. When the pregnant fundus is in the pouch of Douglas there is, of course, no fundus to be felt in front of the tumor. Bimanually the fingers of both hands may perhaps be so closely approximated above the pubes that the cervix may be felt to be continuous with the posterior tumor and absolutely free from any other connection. Retention of urine is more common in retroflexion of the gravid uterus, while a discharge of blood (unattended with labor pains) is more common in extrauterine pregnancy.

5. Antelexion of the gravid uterus, although but rarely recognized as a possible source of error, may occasionally be quite as perplexing as the gravid retroflexion. Whether from an unusually high attachment of the impregnated ovum—quite at the fundus uteri—or from some other cause less easy to understand, a pregnant patient, usually a primipara, is sometimes found who suffers from severe pains during the early months of pregnancy, and in whom the two or three months pregnant fundus forms a globular, elastic tumor which appears to have little or no real continuity with the cervix. The cervix remains thin, hard, undeveloped, pencil-like, and runs behind the tumor of the pregnancy as far as the finger can reach. Further, it is absolutely lengthened, so that it feels as if the whole of an infantile or ill-developed uterus was to be explored behind a sac of pregnancy. I have even known a sound passed to the top of the lengthened but undeveloped cervix, under these conditions, give almost or quite the normal uterine measurement, produce no abortion, and in this way afford to the practitioner who used it confirmation of his (mistaken) opinion that the pregnancy was outside the uterus. Again, the knowledge that such cases occur is the surest safeguard against error. Sometimes the round ligament can be felt on each side of the distended fundus, and if so it is certain that the tumor felt is the uterus itself. If serious doubt remains in spite of ordinary careful methods of examination (which should *not* include the passage of the sound), it may be a relief to remember that extrauterine pregnancy as well as intrauterine pregnancy in a misplaced uterus does not, as a rule, cause urgent danger or need immediate interference so long as there is no sign of uterine discharge. If the patient be kept in bed she may remain under observation until the condition becomes clearer or until a more experienced opinion can be obtained.

6. Twisted-pedicle tumors—(a) blood tumors of the tube from twisted pedicle, and (b) blood tumors of the ovary from twisted pedicle. Small tumors of the tube or ovary arising from or increased after twisting of the pedicle are very liable to be mistaken for misplaced pregnancies which have resulted in internal hemorrhage. Not only are the signs and symptoms extremely similar, but the physical condition, the resulting hematoma or hematocele, may be almost alike in the two conditions. When accompanied, as they sometimes are, with menstrual irregularity, the history also may favor the suspicion of a tubal pregnancy with hematocele. The sudden abdominal pain which characterizes the final twist when the return circulation is obstructed, the vomiting and faintness which accompany this, and the rapid formation of a prominent and tender tumor, are all suggestive. The tumor itself, however, is not so intimately connected with the uterus as a tubal pregnancy would be. Whether formed by the tube or the ovary, it has rather the character of an ovarian enlargement, and, unless adherent to the uterus, there is quite generally some unoccupied space to be discovered between the uterus and the tumor.

So far we have been considering the diagnosis of extrauterine pregnancy as associated with various disturbing influences which usually destroy the life of the fetus and seriously threaten or destroy that of the mother also.

In tubo-abdominal and in later tubo-ligamentary pregnancy both child and mother have escaped these early dangers, and if the child be living the diagnosis is much less complicated. In most cases there is but little doubt of the pregnancy, and the diagnosis then mainly resolves itself into a differential one between intra- and extrauterine pregnancy. When the child has been a long time dead and the history of the pregnancy is no longer recent, the question of any pregnancy may be very doubtful and the diagnosis again may become perplexing and obscure. When the child is living the ordinary history, symptoms, and external signs of pregnancy are probably present. There is a history of amenorrhea corresponding to the period of pregnancy, with or without some history of transient pain and discharge about the time when the fetus escaped beyond the limits of the tube. The patient herself has possibly passed through the troubles and sensations generally incidental to a normal pregnancy—the morning sickness, unusual cravings of appetite, and the period of quickening. The mammary signs—pigmentation of the areola and follicular development round the nipple (never very reliable)—are more likely to be present than wanting. There is turgescence and bluish discoloration of the vulva and vagina. The mother is usually very conscious of the movements of the child, and, if she have experience of former (normal) pregnancies, may perhaps complain of its unusual position.

In tubo-abdominal pregnancy during the latter months the fetus is immediately recognizable on examining the abdomen,

sometimes on simple inspection, and always on light palpation. The fetus and placenta are probably lateral or zigzag in position, but the fetus may permit of passive movement into a more central situation. The ease and clearness with which its various parts can be palpated are quite remarkable; these may be felt to be lying immediately beneath the abdominal walls, and the mother may bitterly complain of pain from the fetal movements. A limb can, perhaps, be taken hold of, and the beating of the fetal heart can be heard with unusual clearness. The parts of the pregnancy most liable to be mistaken for each other are the placenta and the head. The placenta, being almost certainly attached to the tube, should be lower in position. While the hands of the observer are examining the child there is no clear indication of any containing sac alternately expanding and contracting around the fetus. On vaginal and bimanual examination the uterus may be found displaced to one side of the pelvis, only slightly enlarged, and obviously distinct from the child. If this be so the position of the child is certainly extrauterine, and the apparent absence of any covering argues a tubo-abdominal pregnancy rather than a tubo-ligamentary one.

Is the uterus definitely and decidedly distinct from the pregnancy? This is the all-important question, for nearly everything described as characterizing the abdominal position of the child may be wonderfully simulated by a normal intrauterine pregnancy when the walls of the uterus are unusually thin. This extraordinary thinness of the uterine walls, occasionally encountered with or without "hydramnios" or excess of the amniotic fluid, has been noticed by many observers. One of the first to remark it was Ingleby in 1834. In its extreme condition it is very curious and needs to be seen in order to be thoroughly believed. The fundus uteri cannot be found apart from the pregnancy, and this should excite the strongest suspicion *against* an extrauterine position for the child. If the independent existence of the uterus cannot be demonstrated, especial care and patience should be employed in watching, with the hand on the abdomen, for the slightest indication of a uterine contraction. If the loosely-lying limbs of the child do temporarily disappear and give place to the rounded arch, however feeble, of a containing sac, the presumption is in favor of an intrauterine pregnancy.

In tubo-ligamentary pregnancy, before the child is sufficiently formed to be detected by palpation, there may be an opportunity for diagnosing the condition. It appears that in the posterior ligamentary variety the tumor of pregnancy may be so centrally situated and the uterus so united to it—probably so spread out on its anterior surface—that early pregnancy within the uterus is very closely simulated. Rectal examination might materially assist the examiner under such conditions. In the later stages of the tubo-ligamentary pregnancy, when the child is living, many of its features are very comparable to those described as existing in the abdominal variety,

but are less marked. The tumor of the pregnancy is probably lateral or eccentric. Though contained in a sac, the latter is very likely not of uniform thickness, and in some parts the child may seem to be very near the surface and may be more easily palpated than when *in utero*. This especially applies to the anterior or subperitoneo-abdominal variety, where part of the sac of pregnancy may be between the peritoneal reflexion and the skin. Abdominal ballottement of the fetus is often very marked, and the fetal heart beats are well heard. Sometimes the fetal limbs are lying in the pouch of Douglas and are then palpated with great facility. As the child has been originally formed below the placenta, the latter will probably have a higher position than in tubo-abdominal pregnancy, and internal hemorrhage from displacement (with faintness, blanching, and fatal collapse) may arise. The fetal movements, active and passive, and the auscultation of the fetal heart and of the placental souffle, will testify to the fact of pregnancy, but dependence must be placed on careful vaginal and bimanual examination for the detection of its abnormality. The cervix is displaced and the rest of the uterus is pushed (generally) to one side and downward below the sac of pregnancy.

The differential diagnosis at this stage consists in the separation of advanced abdominal and tubo-ligamentary pregnancy from normal intrauterine pregnancy, pregnancy in one half of a double uterus, and pregnancy in one horn of a bicornuate uterus.

1. In tubo-ligamentary pregnancies the uterus is in much closer relation to the pregnancy than in the tubo-abdominal form. It is often intimately incorporated with one side or aspect of the sac, as it so often is in other intraligamentary tumors when these form. In spite, however, of this, the solid thickness of its body, traced upward from below, the undeveloped state of the cervix, and the palpable emptiness of its cavity, all emphasized more strongly the nearer the pregnancy approaches to term, will hardly fail to guide the observer to a right conclusion. If the sound be used to confirm that opinion it must be remembered that the uterus is often greatly stretched by the growth of the pregnancy, but there will be no free movement of the sound within the cavity of the uterus. As already stated, regular contractions and relaxations of the sac are strongly suggestive of an intrauterine position. Whether these ever occur in a ligamentary sac containing some muscular structure is doubtful. This is a point which requires further observation.

2. Pregnancy in one half of a double uterus is only perplexing to those who have no knowledge of the condition. The double cervix, seen through a vaginal speculum, will at once suggest the possible explanation of any abnormality, and the non-pregnant uterus can be isolated from the pregnant one by passage of the sound.

3. Pregnancy in one horn of a bicornuate uterus is more difficult, especially if the non-pregnant horn be considered to

be the body and fundus of the uterus. The condition (like the preceding) is a very rare one, but so also is an extrauterine pregnancy to the ordinary accoucheur. If no serious symptoms are present and labor appears to be proceeding as usual, the child in one horn of a bicornuate uterus will probably be born without difficulty. In some of these cases, however, there is no perfect communication between the pregnant horn and the cervix, and when this is the case the birth of the child is quite as impossible without operation as it is in true extrauterine pregnancy.

In all extrauterine pregnancies which go to term there is a more or less well-marked period of false labor, and with this we have certain warnings, opportunities, and signs which should be of special interest to the accoucheur. The latter is usually sent for on the supposition that labor is beginning, and it is of very great importance that this opportunity for diagnosis and advice should not be neglected. Whenever the cervix is found to be small and somewhat displaced, and to have no proportionate relation to the history and symptoms of a full-term pregnancy, the case should be thoroughly investigated and a full examination made. Especially care is necessary that the complaint of the patient be not lightly dismissed as simply a "false alarm." In extrauterine pregnancy the "pains" are abdominal and are chiefly connected with the movements of the fetus. They are probably accompanied by some vaginal discharge and sometimes by the expulsion of membrane. The pains last for several days, often preventing sleep. Finally they cease—cease suddenly—and the movements of the child are no longer felt. Soon after the breasts enlarge and temporarily fill with milk; but, no encouragement being afforded to its flow, the draught soon ceases. All symptoms directly connected with the pregnancy (except the enlargement of the abdomen) permanently subside, and the patient either enjoys a moderate amount of health and resumes her usual duties, carrying her dead child with her, or septic changes occur within the sac, rigors and fever follow, and the patient drifts into a "typhoid" state from which nothing but the removal of the putrid contents of the sac can rescue her.

This brings us to the consideration of the second division of full-term extrauterine pregnancy, viz., when the child is dead. In tubo-abdominal pregnancy the child is in all cases so easily distinguished that, notwithstanding all movement is lost, there is but little real difficulty in the diagnosis. The shape of the abdominal tumor, and especially the detection of the fetal limbs through the abdominal parietes, combined with the evidence of an empty uterus, will in all cases establish the nature of the case. The differential diagnosis from intrauterine pregnancy, which before "term" and when the child was living we found to be of first importance, is now (probably) no longer necessary and the diagnosis is correspondingly lightened. But in the tubo-ligamentary pregnancy, and especially in the posterior ligamentary form, the diagnosis is often rendered

exceedingly obscure and difficult by the death of the fetus, the more so when several months have elapsed since its life was ended. Menstruation may have been re-established, and the patient does not necessarily volunteer the slightest information which would direct the mind toward the causation of the tumor. There is, of course, no fetal heart beat, no fetal movement, no placental souffle, the patient's breasts have lost all indication of a pregnant state, and if septic disturbance has already taken place the patient may be in no condition to answer intelligently the questions of the examining surgeon. There is nothing but the large, fixed abdominal tumor, the nature of which may be hidden by the thickness of its walls. The suspicion of pregnancy while the tumor was forming, if alluded to, is so common among all women with gradual abdominal enlargement that its significance is very easily unrecognized. No class of case may require more painstaking patience and perseverance in its investigation. Little by little, however, the history of the pregnancy may be gathered. The nine months' slow enlargement of the abdomen, the amenorrhea, the fetal movements (?), the spurious labor or something corresponding to it, the history of the breast signs, all should be inquired after and their presence or absence noted. Sometimes on deep palpation of the tumor one may feel the resisting body of the fetus after displacement of the fluid which surrounds it—a valuable sign, which can only be simulated by a solid tumor, probably papillomatous or malignant, floating in a cystic cavity. The differential diagnosis under these conditions will be from ovarian tumor—single, suppurating, or malignant. The mimicry of the last condition to extrauterine pregnancy with retained fetus may be curiously complete. The clinical diagnosis of tubo-uterine or interstitial pregnancy is an impossibility. The nearest approach to it which can be made is to recognize that in this form rupture takes place from the second to the fourth month, that this is signalized by diffuse internal bleeding as in the worst cases of early rupture, and that hitherto this has always proved fatal. There is an inter-operative diagnosis—the quick recognition of the pathological condition present—which may be assisted by the consideration already given to the affection itself and by the study of all known specimens. The recognition of the special form of distortion or asymmetry produced in the uterus by its presence is the only point of practical importance. Its bearing on quick operative action will be considered under “Treatment.”

Treatment.—The treatment of extrauterine pregnancy is essentially operative and may be considered under two divisions—viz.: (1) operations in the earlier half of pregnancy, and (2) later operations. (1) In the first we must consider operations for diffuse hemorrhage and operations for localized tumor, either an intact pregnancy or hematocele; and (2) in the second division we shall have to deal mainly with the operative delivery of the mother at or beyond the period of term under tubo-abdominal and tubo-ligamentary pregnancy.

1. Operation for diffuse hemorrhage may be required in (a) early rupture of the tube; (b) later rupture of the tube; (c) intraperitoneal rupture of broad-ligament pregnancy; (d) rupture of a peritubal hematocoele, and (e) rupture of a tubo-uterine or interstitial pregnancy. The operation here will of necessity involve abdominal section. It will be an operation of emergency. It will have to be done at the patient's home, very possibly at night, under uncomfortable conditions and often without skilled assistance. None of these difficulties must be allowed to excuse any laxity in surgical asepsis, and therefore the operator must himself be prepared to act as his own chief assistant and by order and method reduce his dependence on others to a minimum. Some kind of operation table is an absolute necessity, for the abdominal cavity will need washing out with warm water. Plenty of boiling water must be available. The operator arranges his portable sterilizer, his instruments, and his sterilized pads (some of which should be of large size) within easy reach of his right hand, so that he can help himself to anything he wants. No time must be lost. When the diagnosis has once been made the operation must be performed at the earliest possible moment consistent with a prepared and cleanly *entourage*. While the patient is passing through the later stage of narcosis the abdominal wall is carefully cleaned with soap and water and afterward with methylated spirit. The incision—made in the middle line—will probably at once disclose some confirmation of the diagnosis, the black color of the blood within the abdomen showing darkly through the transparent peritoneum. On opening this, blood and blood clot pour out freely. The fingers of the left hand are inserted into the abdomen, seize the uterus, and feel at once for the site of pregnancy, the source of bleeding. If, as usually happens, this can be identified by touch, it is immediately withdrawn out of the abdomen, the parts below the tumor being firmly held so as to stop any further bleeding. The operator then, with his disengaged right hand, takes the needle armed with ligature silk from the sterilizer, transfixes the broad ligament below the tube with Staffordshire knot or linked double ligature, ties off the pregnant tube, and finally removes it. The abdomen is now thoroughly washed out with blood warm water, the pelvis is specially cleared of blood clot, and the abdominal incision is closed. After the wound is dressed a binder is applied tightly round the abdomen, and if the patient be nearly pulseless she is placed in bed on an inclined bedstead with the lower extremities raised.

The operation itself is often an easy one, but there are difficulties which may interfere with its ready performance. The most important is the impossibility of seeing what one has to do. The blood continues to well up from the pelvis, and vigorous sponging may only afford momentary glimpses of the pedicle or broad ligament. In this case pouring clear warm water over the wound and packing some of the larger pads into the pelvis and round the affected tube will often prove of service

Sometimes this difficulty of vision has a more serious bearing. If the pregnancy has already escaped from the ruptured tube it may be no easy matter to detect which is the affected side and where is the source of the hemorrhage. Under these circumstances the temporary control of the circulation with one or two pairs of Doyen's lighter elastic forceps will allow of the washing out of the abdomen and enable the operator to search for and to find the tubal rent without fear of further loss while the search is still in progress. Occasionally, when a ligature is difficult or impossible to place, a pair of these forceps may be left on the broad ligament or on the side of the uterus at the close of the operation. A compression of from eighteen to twenty-four hours is usually sufficient. In diffuse hemorrhage from the rupture and extrusion of a tubo-ligamentary pregnancy the temporary or more lasting use of forceps may be of signal service. The bleeding points may be entirely hidden, furnished largely by branches of the uterine artery; and this or firm plugging with iodoform gauze may be the only way of arresting the hemorrhage. In tubo-uterine or interstitial rupture with diffuse bleeding—a condition in which surgery has still to win its laurels as victor—the quick recognition of the condition on opening the abdomen will be the first element of success, and the rent on one side in the upper part of the uterus, and the different levels at which the tubes appear to enter the uterus, should guide the operator to a quick decision. In this case the uterus should be drawn out of the wound, two transfixion pins passed, first through the peritoneum on one side of the incision, then through the uterus well below the tear, and finally through the peritoneum of the opposite side, a "wire-clamp" applied below these, and the latter screwed thoroughly taut. The hemorrhage is then absolutely controlled, and, if the clamp be always ready for use, the time occupied in effecting this control need scarcely be longer than that which has been used in briefly describing the method. The operator can wash out the abdomen through the upper part of the incision above the clamp, doing this carefully and thoroughly, and if drainage be considered necessary the tube can be adjusted at the upper angle of the wound. When the latter is closed the clamp is again screwed up tight, the parts above the clamp are cut off, and the stump is surrounded with iodoform gauze. The only caution necessary to mention is the danger of any slipping of the broad ligament out of the grasp of the wire before the latter is finally tightened. This is easily avoided by transfixing the broad ligament with the pins or by holding up the appendages with forceps (if these are removed), and by screwing the clamp thoroughly tight before the parts above the wire are finally removed.

Washing out of the abdomen in a simple case of diffuse hemorrhage, as in early rupture, can often be done by pouring water from a jug directly into the abdomen; but in such a case as I have been considering, and in a patient with a deep pelvis containing much blood clot, the use of a siphon tube is more

handy and more efficient. By this the stream of water is carried directly to the lowest part of the pelvis and the upward returning stream washes out the blood clot. This "washing out" should never be omitted in cases of diffuse bleeding. Besides cleansing the peritoneum it is probably a means of conveying some fluid into the depleted blood stream; and this, followed (after the operation is over) by a nutrient injection containing brandy, and by temporary elevation of the pelvis and lower extremities, is more useful in overcoming shock and in restoring the pulse than is any attempt at transfusion.

In diffuse hemorrhage the quickest and directest route to the bleeding vessels is an absolute *sine qua non* of operative treatment, and there can be no doubt that this is attained by abdominal section above the pubes. In localized hematocele and in intact extrauterine pregnancy up to mid-term, other methods of operation may be employed besides abdominal section, and we shall have to consider vaginal section under its two aspects of posterior and anterior celiotomy and also the subperitoneal incision in cases of anterior tubo-ligamentary invasion. In true retrouterine hematocele, in which the pouch of Douglas is itself distended with blood, posterior vaginal celiotomy—the direct opening of the pouch of Douglas from the vagina—is obviously the proper method of treatment and no surgeon would probably dream of any other. Under this condition the operation is very simple. A free incision is made in the middle line, the contained blood and blood clot are gently washed out by a stream of warm water carried within the cavity, nothing is done to interfere with the upper limiting adhesions or roof of the hematocele, and after free evacuation the pouch is drained by a tube or by iodoform gauze. In peritubal hematoceles which occupy the whole or a greater part of the pouch of Douglas, an extension of the same method may be employed with advantage, especially if the bulk of the swelling be evidently within the pouch of Douglas. In this case every aseptic precaution is just as necessary as in an abdominal section, and before beginning to operate the hair of the vulva is shaved and the vulva and vagina are thoroughly cleansed and disinfected.

Anterior vaginal celiotomy, or, as it is sometimes called, anterior colpotomy, has been extensively used during recent years in the treatment of peritubal hematocele due to tubal pregnancy. The vaginal vault is opened between the uterus and bladder, the vesico-uterine fold of peritoneum is divided, and the fundus is drawn forward by volsella out of the abdomen through the opening thus made. The uterus and uterine end of the tube on either side are then under the complete control of the operator, and the tube, together with any contained pregnancy, can, as a rule, be ligatured and removed without much difficulty. But the space in which one has to work is cramped and confined, and, while the tube may be easy to remove, it is not so with the hematocele. This often separates from the tube with traction on the latter and it may be very difficult or impossible to remove it afterward. The main objections to anterior

vaginal celiotomy as a routine method of treatment are the following: (1) occasional insufficient space for operative work; (2) frequent inability to remove thoroughly and cleanly all products of the misplaced pregnancy; (3) inability to wash out the abdomen satisfactorily; (4) inability to drain through the anterior opening; and (5) occasional inability to extract the uterus without injury, the uterus being enlarged and softened by the changes consequent on the associated pregnancy. It may be noticed that most of these objections will lose a great deal of their importance if the operator, the patient, and her friends be prepared and ready to accept the possible sacrifice of the uterus in the course of the operation. If the uterus be already diseased or damaged, justifying its removal as an initial step, the space and opportunities thus acquired are ample for all ordinary requirements; there is room for thorough and careful work, the pregnancy and hematocele can be completely removed, the pelvis and lower abdomen may be washed out, and at the close of the operation the most perfect drainage of the pelvic peritoneum can be established by the adjustment of a well-fitting plug of iodoform gauze.

It is, of course, of considerable advantage to the patient to be able to relieve her of her disease without making an abdominal incision, and especially so in cases where drainage is a desideratum, abdominal drainage being frequently followed by hernia. In spite of this drawback, abdominal section is still the better operation, or rather the better route for operative work, in every case in which a posterior colpotomy is inapplicable or insufficient. By abdominal section the extent and connections of the hematocele can be accurately explored, the limiting adhesions to omentum and intestine can be carefully separated or broken through, and the whole of the operation from beginning to end can be performed under the most favorable conditions for manipulation and cleanliness. When operating by the abdominal method the diseased tube must invariably be thoroughly defined, ligatured, and removed. It will often have to be unrolled from the back of the uterus after the main tumor of the hematocele has been taken away, but the adhesions are almost always light and easy to separate. The adhesions of the hematocele capsule to bowel and omentum are, on the other hand, often especially intimate, and when this is the case it is better practice to leave a considerable portion of the hematocele capsule adhering to bowel than to make any attempt at their separation.

Berry Hart has recently described a method of operating in intact anterior tubo-ligamentary pregnancy at mid-term which is sound in principle and may be followed with advantage whenever the conditions permit of its application. In this pregnancy, as we have already seen, the anterior layer of the peritoneum is raised, and at mid-term as well as at a later stage there is a space, either mesially or above the groin on one side, which is uncovered by peritoneum. This can be accurately defined by a preliminary incision in the middle line which opens

the abdomen. When this has been done a direct incision is made into the sac of pregnancy below the peritoneal reflexion. This extraperitoneal wound should be large enough to admit four fingers. The fetus is removed at once, the sac tamponed with iodoform gauze, and the placenta allowed to separate and come away slowly with the discharge.

In tubo-abdominal pregnancy at term there is no difficulty in the removal of the child by an abdominal incision. The crux of the operation is the treatment of the placenta. If this be left, sooner or later it will almost certainly become septic and putrid, so that in all cases of true tubo-abdominal pregnancy it is wise to remove the placenta. A clear idea of its probable relations and attachments will do much to make this part of the operation easier and to rid it of much of its otherwise alarming features. Wherever the placenta is, there is the Fallopian tube, and it is from this it receives the greater portion of its blood supply. As we have already seen, sometimes the placenta is still within the tube, absolutely surrounded everywhere by tube, and nothing can be easier than to ligature it off and insure its complete removal without any loss of blood. When it is within the gestation sac and mostly covered by reflexions of the amnion, accessory vascular attachments to the omentum or abdominal wall are first ligatured and divided, the placenta is slightly tilted up at the most accessible part of its circumference, and forceps are used to clamp its tubal attachments below. The placenta is then removed and the tubal attachments are subsequently ligatured. The most difficult and dangerous form of attachment is that when the amniotic membrane only lines the upper surface of the placenta, and all its under surface is attached not only to the tube and broad ligament but also to the parts adjacent. Still, in this case a modification of the plan already described will afford the best chance of success. Sometimes the deeper attachments (uterus and broad ligament) may be seized before separation by the fingers of an assistant. If not, the most accessible route to the under surface of the placenta is searched for and separation is begun. As soon as possible the tubal and uterine attachments are clamped by the lighter elastic forceps of Doyen, the placenta is peeled off, and two or three large sterilized pads are packed into the cavity from which the afterbirth has been removed. Ligatures are applied to the broad ligament and tube and wherever it is possible by so doing to control the bleeding. Where these are useless, packing with iodoform gauze will prove the best alternative method for control of hemorrhage. When this is necessary, if the original abdominal incision—probably mesial—be decidedly to one side of the placental site, it will be wise to finish the operation by making a secondary abdominal incision immediately above the gauze, from which the packing may be readily removed some four or five days later. The very rare condition when the child is abdominal and the placenta intraligamentary belongs to a very different category. From a surgical standpoint this

pregnancy remains tubo-ligamentary throughout and is governed by the same laws of treatment which apply to tubo-ligamentary pregnancy. And in tubo-ligamentary pregnancy there is no necessity for the operative removal of the placenta. If the sac be drained the placenta will itself separate and come away with the discharges; this usually takes place without any pyrexia or constitutional disturbance.

In the posterior or retroperitoneal variety of tubo-ligamentary pregnancy the peritoneal cavity is always opened by the abdominal incision. Within the abdomen, full and bulging like a pregnant uterus, is the sac of pregnancy. This is opened by an incision directly underneath the abdominal wound; the edges of this are held against the edges of the abdominal incision; the child is extracted and, after ligature and division of the cord, is entirely removed. Now it may be possible to remove the placenta with safety from the interior of the sac, especially when the infant has been dead for weeks or months, and by so doing, if no serious hemorrhage is occasioned, convalescence may be very much shortened. If there be any doubt, however, if the placenta be full of blood and firmly attached, no interference is necessary. The incision in the sac is sewed to the abdominal wound, the cord is left hanging out of its lower angle, and the sac is drained. In the anterior or subperitoneal-abdominal form of broad-ligament pregnancy the same remarks apply, but the sac may sometimes be opened at a part uncovered by peritoneum. If some part of the child is obviously almost subcutaneous (and that is most likely to be found on one side of the middle line), the sac may be opened at once and the operation of removal of the child and drainage of the sac conducted without opening the abdominal cavity or seeing the peritoneal membrane. More frequently, perhaps, if the incision has been median, the peritoneal cavity will be opened at the beginning of the operation. If so the displacement of the peritoneum can be accurately estimated (as in the operation for mid-term ligamentary pregnancy) and a secondary incision can be made directly opening the sac, through which the child is removed and drainage established. The mesial exploratory incision is closed by suture.

Now we can return to the consideration of the complicated form of pregnancy in which the child is abdominal and the placenta intraligamentary. The main indication in this form would be, as I believe, to convert the complex "tubo-ligamentary-abdominal" pregnancy into a simple tubo ligamentary one. After the fetus has been removed this may, perhaps, be effected by sewing the laceration of the sac to the abdominal wound. If the opening in the sac be inconveniently situated for this, the (divided) cord may be dropped inside the sac, the edges of the laceration turned in, and the abdominal opening in the sac closed by suture. Then, either before or after closure of the abdomen, a large opening is made by vaginal section into the most dependent part of the sac, the cord is drawn down

into the vagina, and the rest of the wound and the lower part of the sac are plugged with iodoform gauze.

DISEASES OF CHILDREN.

Acute Gastro-intestinal Infection in Infants.—Charles Gilmore Kerley¹ states that, looking at these cases of acute summer diarrhea from a purely clinical standpoint, we are forced to include them all under one heading—that of acute gastro-intestinal infection, a poisoning process brought about through the agency of bacteria. Booker looks upon the streptococcus and the proteus vulgaris as most potent causative factors in summer diarrhea. When lesions develop they are the result of both the action of the bacteria and their products. This has been demonstrated to the author's satisfaction by two hundred and fifteen personally conducted autopsies on children who had died with intestinal derangements or with an intestinal complication. In the management of the disease the first point to be realized is that it is the contents of the intestines which demand our attention. With the onset of the attack one grain of calomel should be given in divided doses of a sixth of a grain every thirty minutes, if there is no vomiting. If this symptom is troublesome it will be advisable to give from a thirtieth to a fortieth of a grain every fifteen minutes until the desired amount has been given. When a decidedly prompt cathartic action is required in cases where there are marked prostration and infrequent, foul stools, an initial dose of castor oil is to be preferred to the calomel. The most important step in the treatment is stopping the milk diet, whether nursing or bottle-feeding. It may not be necessary to discontinue it for longer than twenty-four hours. In other cases it is dangerous to allow cow's milk until two or three weeks have elapsed. Should no relief follow, it may mean an involvement of the intestinal structure. Milk, by fermenting and passing undigested the entire length of the intestinal canal, acts as a local irritant and exciter of peristalsis and furnishes a means for the development of bacteria. Rest is the first indication for the intestines. The patient may drink cool, boiled water, if there is no vomiting. Diet may consist of barley water, wine whey, liquid peptonoids, weak albumen water, and beef juice. If vomiting is troublesome the food must be reduced, sometimes suspended. Closely following the calomel and change of diet, give

Bismuth subnitrate (Squibb's).....	12 to 20 grains.
“ salicylate.....	1 grain.
Water.....	enough to make 1 drachm.
Aromatic tincture of rhubarb.....	1 to 2 minims.

This is given hourly. In these large doses the results given are very satisfactory and often astonishing.

The author gives the treatment for various conditions and complications. The resumption of a milk diet should be very gradual.

Albuminuria as a Lithemic Manifestation in Early Life.—B. K. Rachford² calls attention to a group of symptoms from which young lithemic patients suffer, which come and go without apparent cause, continue for a few days, and are characterized by nausea, uncontrollable vomiting, slight elevation of temperature, and more or less pain in the head and in the gastric region. A study of these cases has developed the fact that in a number of them there is a transient albuminuria, which continues during and for a short time after the other symptoms of the attack have disappeared. This albuminuria, he says, cannot be explained by arterial changes at this early period of life, and therefore can only be due to the irritation of the delicate kidney structures of the child, which results from the attempt at elimination from the blood of the poisonous and irritating products which are the causes of the lithemic attacks. The comparative infrequency of lithemic albuminuria in late childhood and early adult life is due, on the one hand, to the better developed and more resisting structure of the kidney, and, on the other, to the fact that the arterial changes found in old lithemics have not yet had time to develop.

Bladder, Ectopia of.—Wendling³ describes the case of a newly-born infant who had a tumor on the abdomen from the umbilicus to the pubic symphysis. This tumor was recognized as the urinary bladder, the deeply red mucous membrane presenting. The child evidently suffered much pain from the examination. The external genitals were markedly deformed, but were recognized as those of a female baby. Operation had to be deferred until the child should be about 4 years old. In the meantime boracic acid was dusted over the very sensitive mucous membrane, and the diapers changed so often that no eczema or excoriations developed. The wearing of a bandage was found impracticable because of the sensitiveness of the tumor and the frequent changes necessary.

Cardiac Diagnosis.—Soltman⁴ gives the characteristic diagnostic features of the following heart sounds: 1. Accidental, anemic, systolic murmurs, absent during the first three years of life, rare up to the age of 7 and 8, common in chlorotic and anemic children at puberty. 2. Heart-lung murmurs, absent under 2 years of age and not of diagnostic value, but are frequently mistaken for anemic or endocardial sounds, from which they are readily distinguished by the way they vary in intensity, extent, timbre, and pitch with the position and breathing of the child. 3. Endocardial systolic murmurs, if constant, limited to the apex and accompanied by a rising character of the apex beat, are the only diagnostic sign of mitral insufficiency. 4. Myocardial systolic murmurs are not limited to the apex, but are heard with equal intensity at the base or even at other points; they are accompanied by accentuation of the second pulmonary sound and by an increase in the area of cardiac dulness, and vary in pitch. These murmurs are caused by a degenerative or by an asthenic condition of the myocardium.

Cholelithiasis in Infancy and in Childhood.—A. V. Wen-

del⁵ has carefully observed sixteen cases of this disorder occurring in children under 8 years of age. He describes the symptomatology at length. In the diagnosis pain is most important. In very young children its presence can be determined only by the physical and emotional phenomena occurring as its result. Occasional crying spells accompanied by severe vomiting should always make one suspicious of calculi, no matter how young the subject. Children between 4 and 8 years of age invariably refer the pain of gall-stone colic to the epigastrium. One of the most valuable diagnostic signs is the sensitive state of the gall bladder remaining after the cessation of the symptoms of colic, and may be ascertained by placing the child in a warm bath and gently palpating the abdomen until the region of the gall bladder is reached. Sudden contractile parietal rigidity may be induced or the face be expressive of pain. Enlargement of the gall bladder may be detected or an aberrant position. Rubini called attention to pain around the xiphoid cartilage from gall stones during their expulsion. The author has also noticed it. Vomiting is severe, persistent, interrupted only by the crying, and very exhausting when the attack is of long duration. The cessation of emesis is usually coincident with the extrusion of the concretion into the bowel, but it may continue with uninterrupted severity during acute cholecystitis or cholangitis. Convulsions may occur during the culmination of the paroxysm of colic. In young children vomiting attended by convulsions and without fever must always be considered as very significant of some form of colic. The temperature in some of the cases observed went up as high as 102.5°. Chills were noticed in one case only. The respiratory movements were found to be costal, and also jerky when the patient was placed in a sitting posture. In young persons jaundice caused by gall stones without pain is rare. The urine may not give the reaction of Gmelin, unless it be evaporated to about one-tenth its original volume. Sometimes the Gmelin reaction is absent, but then the bile acids should be tested for before concluding that there is no admixture of bile. In children acholic feces are not necessarily white; frequently they present a green color with putrid odor and diarrheal tendencies. The examination for concretions must be very thorough, because in most instances they are pure cholesterol calculi, which so easily disintegrate.

Cholera Infantum.—H. N. Potter⁶ says that with a recorded mortality of over 90 per cent in this disease the past treatment would seem to be far from satisfactory. He recommends a treatment in which he has great faith, but which he has not had the opportunity to thoroughly test on account of the prejudice against new treatments: 1. Take away all food for twenty-four hours. 2. Clear out the intestinal tract with hydrargyrum chloridum mite. 3. Give large quantities of an intestinal antiseptic solution, which, of course, must be weak. The quantity given should be enough to keep the stomach well filled. If it cannot be given by the mouth—that is, if the child

cannot be made to swallow it in such quantities—a tube should be used and the solution poured into the stomach. With this the intestinal tract should be irrigated with the same solution being thrown well up. To do this a No. 10 or 12 soft-rubber catheter should be attached to a fountain syringe. The idea is to thoroughly fill the alimentary tract with the solution. 4. If the patient should need stimulants, hypodermatic injections of brandy or strychnine should be given; and if the stomach rejects the treatment or there is persistent vomiting, the irrigation of the intestinal tract should be kept up and the stomach allowed a rest for a short time, and then the treatment again resorted to. If there is severe pain, external application should be used, or, if necessary, hypodermatic injections of therapeutic agents that are not constipating given. With the experience that he already has had with the removal of food and the administration of antiseptic solutions alone and in extreme doses, which is as near as he could come to this treatment, he is of the opinion that this treatment, rigidly enforced, will show more beneficial results than any treatment used heretofore.

Earache.—G. A. Leland⁶ says that earache is a symptom whose importance is too often underrated, whose gravity is unappreciated, whose far-reaching consequences are not even imagined, whose immediate pain and suffering are but the least of its evils, whose evils, both present and future, can be largely if not wholly abolished by rational treatment. Every practitioner, general or special, ought to become familiar with the appearance of the normal drumhead, or at least with the membrane unaffected by acute inflammatory processes, whether normal or not. Variations in color, lustre, transparency, position, etc., are of great moment in the selection of proper treatment and are not difficult to recognize. The author mentions a number of anatomical points necessary to be remembered in connection with ear trouble. On account of the position of the Eustachian tube, a little air is able to get into the mouth of the tube when it is open, and by its closure some of the air is also forced upward into the tympanic cavity. This is what keeps up the equilibrium between the air of the middle ear and that of the outside world. It is well known that at the level of the sea we have about fifteen pounds of air pressure to the square inch. It is also true that the mucous membrane absorbs oxygen from the air, and that therefore about three-tenths of the air in the middle ear and its annexes will be absorbed. If this is not supplied by new increment a partial vacuum will be formed, to compensate for which a pressure on the outside becomes apparent: and as the drumhead is about a quarter of an inch in extent, this external pressure must amount to something like four pounds, which, upon so delicate a structure as the drumhead, will produce stretching of it, of the ligaments fastening the ossicles, and of the coats of the blood vessels themselves (by a negative pressure), so as readily to entail a mischief which is never wholly recovered from. Inflammations of the naso-pharynx and thickening of the membrane of

this tube will cause its collapse or its closure; adenoid vegetations in the naso-pharynx prevent the proper movements of the Eustachian mouths, and hence the proper amount of air is not supplied to the middle ears. This vacuum causes a cupping of the tympanic cavity, which sets up hyperemia. An effusion of serum from the blood follows, which *may* cease as soon as the vacuum is satisfied, or may be continued into inflammatory conditions. Bulging, distension, and rupture ensue, with a running ear. When the discharge ceases the laity considers the ear healed. The author believes that an earache is never forgotten, and that it shows itself often in a cicatrix which is an infallible mark of rupture in after-years and an index of graver troubles. Gradually increasing deafness in middle life or later may be referred to such a process as described above, occurring perhaps many years before. Meningitis, osteitis or necrosis of the trabeculae of the mastoid and of its walls, thrombus in the lateral sinus with pyemia and death, involvement of the digastric fossa with resulting abscess of the neck or even pleural cavity, may be some of the results of earache. The treatment rationally deduced from the pathological conditions is as follows: In the first stage, that of collapse or closure of the Eustachian tube and a partial vacuum, which lasts from two to perhaps even eight hours after the onset of the earache, the opening of the tube and the restoration of proper air pressure in the middle ear will perhaps establish the circulation so as to prevent the extension of inflammation beyond the hyperemic stage. The air douche is valuable up to six hours after the onset. When the ear drum begins to bulge outward in its posterior segment and the earache to increase in its intensity, make a free incision in the inferior posterior quadrant near the periphery. This is better than allowing Nature to make her own perforation, for union will be more perfectly accomplished; and, if the incision has been made early, the drumhead has not been over-distended, the little ligaments of suspension and of articulation among the ossicles have not been stretched, and the ear is restored nearly if not quite to its normal state.

Empyema.—Samuel S. Adams² writes of irrigation by submersion in the treatment of this disease. To A. Zeman, he says, must be given the credit of introducing the warm bath as a means of washing the pleural cavity in cases of pyothorax. He considered the usual method of washing out the pleural cavity unsatisfactory, as only the liquid matter is removed, while many products of inflammation adhere to the pleura, thus keeping up the irritation. The process was discovered by accident, a patient who “literally swam in pus,” in spite of irrigations of the cavity, having been ordered to take a bath to wash off the pus from the outside of the body. Taking advantage of a lack of vigilance of his attendants, he allowed the water to go above the opening and into the pleural cavity. Zeman, appearing upon the scene at that moment, noticed that with each inspiration, in consequence of the expansion of the

thorax and negative pressure within the pleural cavity, the water entered with great force and was forcibly expelled by each expiration, carrying with it a great mass of thick pus and fibrinous coagula which had remained in the pleural cavity in spite of the irrigation. He then placed his hand over the opening, and it was drawn in by a force estimated to be equal to one-fifth of an atmosphere. From that time the patient was given daily baths. The ordinary river water was filtered and boiled, but no disinfectants were used. The water in the tub stood about three inches above the opening, and the temperature was 95° to 99.5° F. The bath usually lasted from ten to fifteen minutes. In two more cases the author verified the above. After operating he thoroughly washed out the pleural cavity with the irrigator until the water was returned clear; then he placed his patient in baths, and in both cases a mass of compact products of inflammation was washed out. Zeman's reasons for preferring this method are: 1. It is simpler, cleaner, easier, and in the ten to fifteen minutes that the patient is sitting in the bath he will be washed out two or three hundred times, not three to four times. 2. Much economy is caused in dressings, as by removing the thickened matter from the pleural surfaces there will be less irritation and the production of much less pus. 3. The baths improve the general condition of the patient, causing better metabolism. In irrigation fresh water is constantly used, but as the pus and other products are heavier than water they fall to the bottom of the tub, while the upper portion of the water remains unpolluted. Adams himself tried the treatment successfully in a case which he reports.

Heterotaxia of Internal Organs.—Heinze⁴ reports the case of a boy $8\frac{1}{2}$ years old who came under observation for an attack of diphtheria, from which he recovered. The right side of the thorax is slightly flattened; there is dextrocardia, but the heart sounds are perfectly normal; there is slight left skoliosis. The boy is right-handed. The stomach, liver, spleen, and sigmoid flexure are completely transposed. In the second case the heart only was transposed, the other organs being in their normal positions. The prognosis of these cases is excellent, the condition not causing the slightest inconvenience.

Idiocy, Amaurotic Family.—A. Jacobi² reports and describes 3 cases which came under his observation. He says that altogether 27 cases have been published. In all of them there were the same symmetrical changes in the macula lutea—viz., the white, somewhat spherical spot with a brownish-red centre, similar to what is seen in embolism of the cerebral artery, with gradual atrophy of the papilla; the same lack of innervation, as shown by weakness of intellect and of muscles, the same connection of the intellectual deficiency with the characteristic eye changes, and the slow but sure increase of the symptoms. It matters little, and depends greatly on the individual powers or opportunities to observe.

the progress of such a case, whether there is a little more or less rolling of the eye, or increasing indolence, or reflex anomalies. The general progress and the end have been the same—viz., the blindness and idiocy became complete, nutrition was impaired (marasmus is often mentioned), and a fatal termination completed the history of the cases before the end of the second year. Our anatomical knowledge of the pathological changes underlying these uniform vital changes still leaves much to be desired. In one case the arachnoid and pia were found thickened, the cortex hard, the cerebral fissures strongly marked, the sulcus of Rolando and the fissure of Sylvius confluent (always a low form of development), and the island of Reil uncovered. The pyramid cells were but rarely normal; both lateral columns have been found degenerated. In a case lately described there was an extensive apparent sclerosis of the pyramidal tracts and in the pons, medulla, and spinal cord. The observers suggest that possibly many of the pyramidal fibres may never have been myelinated. Moreover, the anomalies of the brain and the cord are not contiguous. In one case there was thickening of the retina in the area of the macula, excavation of the papillæ, and atrophy of the optic nerve fibres. There was no vascular disease nor inflammatory process, but atrophy of the cortical pyramid cells, descending degeneration of the whole pyramidal tract, and degeneration of the motor root of the trifacial nerve and of the pedunculi cerebelli. The chiasma was found normal. The blood vessels were also found normal, and there were no evidences, we are told, of anything like an “inflammation”—at least, such as could be traced to the blood vessels. What, asks the author, is the morbid process underlying the progressive intellectual and physical change and decline? A mere arrest of development in early embryonal life, which has not been proved, but presumed to exist by Dr. Sachs, cannot cause a *progressive* change such as is illustrated by the increase of idiocy and paralysis, and of the visible gradual alterations of the retina in a child that at first appeared normal. The optic tissue consists primarily of radiated spindle-shaped cells which resemble the spindle-shaped cells primarily found in the early stages of the brain. The suggestion is justified that the normal and the abnormal development of these spindle-shaped cells may go on *pari passu* both in the embryonal eye and in the embryonal brain. Embryologists and histologists will perhaps elucidate the connection existing between the degenerative process—which possibly is of an inflammatory nature originally—in cases like the ones described, and the accompanying ocular, cerebral, and spinal defects. To speak indiscriminately of a degenerative process pure and simple, without inflammation, either acute or chronic, seems to the author a questionable procedure as long as we are not certain or unanimous as to the essential requirements or character of “inflammation.” The causes of inflammation are not specific. Any noxa or injury may produce it, provided it be sufficiently intense to

cause both degeneration of tissue and certain disorders of circulation without producing complete interruption of circulation and necrosis of the tissues. The rapid physiological evolution of the spindle-shaped cells composing, at that early period, both the optic tissue and the cerebrum, furnishes the possibility of pathological alterations. Developmental over-activity in the embryo and fetus may be looked upon from the same point of view as post-natal functional over-activity. The pathological anatomy of the newly-born heart, or of the rachitic bone, or of the over-exerted muscle of young or old prove the close proximity of physiological and pathological conditions. For this reason the author cannot divest his mind from supposing that the degeneration which has been described as common to the few autopsies of such cases as his were originally of an inflammatory character. It should be remembered that there may be extensive cell degenerations without marked disorders of circulation, resulting, for instance, from the influence of toxins. The thickening of arachnoid and pia and the hardness of the cerebral substances noted in one of the autopsies made, appear to point in that direction. It appears not unreasonable to suppose that the same inflammatory (proliferative, hyperplastic, and by-and-by perhaps finally cicatrizing) process takes place in the macula lutea, or what is to *become* macula lutea. Its late development would explain why (while undoubtedly the anatomical conditions of idiocy may be nearly developed at birth) the alterations of the macula lutea are discovered late, why they gradually get more pronounced and more destructive, and why they need not always appear at a regulation time.

Infant Feeding.—L. M. Holt answers the question, "Where does the medical profession stand to-day upon the question of infant feeding?" in the following summary: It is well established: 1. That good breast milk is the best infant food. 2. That no substitute for breast milk can be trusted which does not furnish essentially the same elements—fat, sugar, proteids, etc.—as breast milk. 3. That these elements are found only in the milk of other animals, cow's milk being the only one that is available for general use. 4. That cow's milk requires some modification before it is fed to infants; first, because the proportions of the different elements (fat, sugar, etc.) are not the same as in breast milk; and, secondly, because some of these elements, notably the proteids, are not identical with those of breast milk. The important questions in infant feeding which are now in dispute are: 1. With reference to heating milk: Whether all milk shall be heated—if so, to what temperature and for what time; whether the purpose shall be mainly to destroy pathogenic germs or to improve the keeping properties of the milk; also whether heating improves its digestibility, or the contrary. 2. With reference to cleanliness: What the standard of a "clean milk," bacteriologically speaking, shall be; also whether the exclusion of pathogenic germs by care and intelligence, and a great reduction in number of saprophytic

forms by scrupulous cleanliness in milk production, may not give us what we need—clean milk a few hours old, which will have all the advantages of pasteurized milk without any of its possible disadvantages. 3. With reference to milk modification: Whether such accurate modification as is measured by variations of small fractions of a per cent is really essential, or whether less accurate modification may not give equally good results provided the original milk is the best possible. Much is still to be learned regarding precise indications for varying the proportions of the different elements in milk modification. Infant feeding is a large subject, and let no one think to secure the best results without giving both time and thought to the problem. It is still a rich field for study, which will amply repay any one who devotes himself to it.

J. Frank Kahler⁹ says that in the case of inflammation of the alimentary tract in children it is of paramount importance to know: 1. *The chemical reaction of the alvine discharges.* If excessively acid, this is due to the carbohydrates; if very alkaline, we may infer that it is due to the ingestion of albuminous foods. 2. *The color.* If green the infant has eaten too much of the albuminous foods or has taken its milk too fast; consequently the casein has not been digested and is an excellent culture medium for the germs which produce the green color. 3. *Odor.* If this is scarcely perceptible or slightly sour, the cause is certainly the starchy foods, while if very offensive it must be due to the proteid foods. 4. *Consistence.* If the discharge be very thin, with little mucus and no blood and not very frequent action, this would indicate that the seat of the trouble is the small intestine; while if the consistence is somewhat heavier and the discharge contains mucus with perhaps some blood, accompanied by tormina and tenesmus, the lesion is in the colon. If in the colon, intestinal lavage is indicated with an astringent solution, such as chloride of zinc or a decinormal sterile salt solution. If in the small intestine, astringents should be given by the mouth, such as arsenite of copper or bismuth. 5. *Digestion.* If solid particles are seen we may at once determine what food to withhold, or at least modify the manner of feeding it. 6. *Constitutional symptoms.* If there is a high temperature it is certainly due to the albuminous foods, for the carbohydrates do not produce marked constitutional symptoms. Therefore the indices to the kind of food required are the location of the trouble, the chemical reaction, and the odor. The author further describes the various kinds of foods and gives directions for their preparation, and quotes the following from Rachford: "Poisonous ptomaines are formed by fermentation of albuminous food and not in carbohydrates. Therefore we find constitutional symptoms in diarrhea accompanied by fetid stools, but not constitutional symptoms in diarrhea due to starch fermentation."

M. L. Hughes⁹ believes that neglect, overcrowding, and unhygienic surroundings are all potent factors in the present great infantile mortality, but greater and more than all is bad

artificial feeding, which sooner or later results in some gastrointestinal disorder, through which the system gets below par and becomes a ready prey to every current disease. Condensed milk will fatten, but close observation will disclose evidence of rickets and malnutrition. Other artificial foods are similar and are open to the same objections. The nearest approach we have to mother's milk is cow's milk modified to suit the size and age of the infant. The fresh morning's milk is strained through a sterilized cloth and set on ice for four hours, when there will be a sufficient quantity of cream. Dissolve the milk sugar in boiled water, add the cream (previously removed from the milk), alkalinize with lime water, and thoroughly mix. Sterilize for twenty minutes at a temperature not exceeding 170° F., after which place the bottles on ice.

X-Ray Diagnosis in Children.—Robert W. Hastings¹⁵ advocates the routine use of the X-ray as a necessary part of an office equipment. The danger of burns and deep seated tissue degeneration has been reduced to a factor so slight that it does not merit the dignity of very serious consideration, especially when the source of generation of the rays has been affected by static machines. With the exercise of tact children manifest little fear of the apparatus. Even very young subjects are often more tractable than nervous adults. Fluoroscopic examination should be as short in duration as possible. A good radiogram is of greater value than the momentary appearance of a shadow cast upon a screen. To secure a radiogram, or even more than one, requires but little more time than a careful fluoroscopic examination. Especially is this true of children. It has been the author's custom to secure the part to be radiographed to the sensitive plate by a few turns of the roller, or a strip of adhesive plaster, thus reducing blurring and double images to the minimum by easy restraint. The time necessary for exposure in children to secure good results is fortunately much less than in adults, the tissues being singularly easy of penetration and the detail all that could be desired. The certainty of location of foreign bodies in any part of the economy in children is a matter of satisfaction, for the assurance that such foreign body will appear upon the plate is looked forward to with a degree of positiveness which does not obtain always in the adult. In addition to the location of foreign bodies, it may be stated that the early differentiation between primary acetabular disease and tubercular disease of the head of the femur is only possible with certainty by means of the Röntgen rays.

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ORIGINAL COMMUNICATIONS.

THE EVOLUTION OF SPECIALISM IN MEDICINE.¹

BY

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Gynecologists:*

IN conforming to the custom which demands an address from your retiring President, I cheerfully and feelingly comply with that other usage which requires that my first expression on this occasion shall be one of profound gratitude for the honor conferred in electing me to preside over this your eleventh annual convention.

We have, at this meeting, entered upon the second decade of our organic existence. The moment is opportune for a brief reflection upon the purpose which brings us into annual convention. That that purpose is real and deep and earnest is shown by the fact that each of our reunions but serves to increase the enthusiastic devotion to work which has always characterized our proceedings. From the day of the preliminary convention at Buffalo, April 19, 1888, to this moment,

¹ President's address before the American Association of Obstetricians and Gynecologists, Pittsburg, Pa., September 21, 1898.

there has been no flagging in the task to which we, as a body, have set our hands—the task of broadening, deepening, and refining those beneficent departments of the healing art embraced in the title of our organization. To this congenial task we shall continue to devote the best energies of our nature. But, while our object and purpose are clear and distinct, it may be well for us to pause a moment and consider in a somewhat philosophic way not only our present status, but those forces and conditions which brought us into existence and those influences which shall determine our destiny.

It is safe to accept ourselves in our organic form as an integral part of a complex social fabric. Social fabrics such as ours have their origin in primitive conditions, from which they are evolved in conformity to established laws—laws which deal with matter and motion and force. We can fancy that the starting point was a stable equilibrium, which, in fact, can be nothing more than a theoretical conception that marks the transition between growth and decay, between life and death. In the course of those changes which we recognize as developmental and progressive, we are constantly confronted by phenomena which display, on the one hand, the persistence of immutable force, and, on the other, the diversion of that force into multitudinous channels through the instrumentality of resistant inertia. The results are not only correspondingly multitudinous, but each result is susceptible of further segregation in the course of progression to final effects. Thus each division of initial force results in the changing of a uniform into a multiform force, while each separate form of the latter becomes itself a specialized force, susceptible of further subdivision. It follows, therefore, that we must accept as a fundamental sociologic doctrine, based upon primary biologic law, that progress is due to the gradual evolution of heterogeneity. This process is exemplified not only in the complex social organisms, but in every phase of organic life. The seed that drops into the soil speedily loses its homogeneous character in the process of germination, and still further in each successive change, until maturity is attained in shrub or tree or plant. In the act of human reproduction the same phenomena are exhibited in even more complex form in the mysteries of embryologic development and in the conditions of subsequent individual existence. What is true of the individual members of the vegetable and animal kingdoms is still further manifested in the origin and development of species in those departments of nature. The ultimate products are manifested in the complex

flora and fauna that to-day entrance our naturalists in their efforts of analytic research.

We find the lesson that best subserves our purpose exemplified in the initial changes which take place among the most primitive of peoples. Let us take, for example, as suggested by Mr. Spencer, a tribe of North American Indians. Living, as they do, chiefly by the chase, an early necessity which they encounter is the means of killing their game, and, let us say, each man provides himself with arrows for the purpose. Presently one of the number, as the result of accidental influences or conditions, discovers that he can make better arrows than can his fellows. They, in turn, desiring the best implements, go to him for their arrows, for which they compensate him with mats or baskets or fishing gear; while he, stimulated by reward and the distinction implied by patronage, restricts his labors to his new-found task, improving his product in excellence with that increasing skill which comes from practice. The influence is reciprocal, and its widening range of influence is noticed in the improving quality of the mats and baskets and fishing gear made by those who find it no longer necessary to make their arrows. Here is the multiplication of effects from an initial cause, and here, too, we observe the commencing specialization of function and of labor exemplified amongst the most primitive of peoples. What is true of these simple folk is true in a more pronounced degree throughout the increasing complexity of civilized society. So true is this that to-day there is not a single department of human activity, there is not a single product of human labor, mental or physical, but that is dependent for its possibility upon numerous other highly specialized human activities. In the building of a house how many special activities are exercised, in forest, in quarry, in kiln, in factory, and in the final act of construction, until the finished structure stands ready for the coming of its owner! In the construction of the stately bridges that span the three rivers that here mingle their tides, how many "specialists" have been engaged in the mine, the forge, the foundry, and the coffer-dam! In making and operating the railroads over which you came hither with such comfort, safety, and speed, how many "specialists" have been employed! The telegraph, the telephone, illuminating plants, and hydraulic institutions are but a few, a very few, other examples made possible only by employment of highly specialized human skill. From these observations we are forced to conclude, with that master genius who has formulated with such clearness the philosophy of evolution,

that "a part-cause of evolution is the multiplication of effects, and that this increases in geometric progression as the heterogeneity becomes greater"—conclusions which are not only "established inductively, but are deducible from the deepest of all truths."

* But if primitive peoples required arrow-makers or the fabricants of other implements, other necessities speedily arose, chief among which was attendance on those who were injured in the chase, who were wounded in battle, or were sickened by the effluvia of the primeval swamps. It was at this point that your progenitor, "the medicine man," stepped upon the scene. He is the necessary and inevitable incident of every primitive people. The Egyptians had their sages, soothsayers, and *pastaphori*; the Persians had their *genii*; the Phenicians, their *cabiri*; the Hindustanese, their *vaidyas*; the Tartars, their *shamans*; the Scythians, their *enares*; the people of Borneo and Sumatra, their serpent charmers; the Zulus, their rain doctors and *tnwalas*—these are among the examples of the earliest formation of the medical branch in the social segmentation of primitive peoples.

In compliance with the law governing the multiplication of effects, these primary specializations were speedily followed by secondary specializations, traceable among peoples whose progress in civilization enables us to follow the successive phenomena of their evolution. Thus among the earliest Greeks, who inherited much from antecedent peoples and who appear in the arena of history with a complex civilization, we find at the Homeric period medicine locked up in the noisome cabinet of superstition, zealously guarded by an ignorant priesthood; yet in the days of Hippocrates there were regular surgeons to the armies; there were midwives, or navel-cutters; there were oculists, dentists, and lithotomists; and there were *iatreia*, or clinics, both public and private. Rome, which began with the Augurs and Haruspices and other practitioners of base superstition, had so far exemplified the process of specialization that by the time of the Empire there were not only general practitioners, but there were, according to Baas, "oculists, aurists, surgeons, dentists, uroscopists; specialists in bleeding, catheterization, and clysterization; herb doctors, milk doctors, gynecologists, movement curers; specialists in private diseases, in the treatment of fistulæ, in the cosmetic art; hair doctors, wine doctors, hernia doctors," etc.

We all understand that this high degree of specialization occurred as the distinguishing feature of the highest civiliza-

tion ever attained before our own epoch. It was the highest degree of social organization known to other than modern history. This was true not only of the medicine of that period, but of all the avocations of life. The process of segregation had been carried to its logical limit, until each resultant product was without that potentiality essential for its perpetuation. A cycle in the evolution of the race had been defined—a cycle as clear, as distinct, as inevitable as that which marks the moulting of the dove, the flowering of the rose, or the procession of the equinoxes. Majestic forces operating under resistance had sustained deductions at each successive stage, until motion had practically ceased, and humanity, a trivial plaything in the arcana of Nature, was brought to a state of relative equilibration. The heterogeneous had resolved itself into the homogeneous, the specialized had become the generalized, and the active the inert, as the world, wrapped in the Lethean mantle of the church, dropped into its long, reposeful sleep. From this sleep the giant of humanity finally awoke, refreshed and surcharged with potential force with which to inaugurate another cycle in the evolutionary development of our race.

Again we see in the great laboratory of what we are pleased to call civilization the same laws producing the same results under the same conditions. Again do we see the homogeneous undergoing division and the process of specialization again at work. In illustration of this fact, it is our present purpose only to speak of our own profession since the breaking of that dawn which shed its most effulgent rays in the dark corners of the cloister. At that period the church, in its complete dominance, had usurped practically all the functions of society. The church was, in fact, the form and expression of the homogeneity of that sombre period. As a consequence, when the work of social segregation was again inaugurated, the healing art was exercised exclusively by the priesthood, which had been the custodian of its secrets during the long, dark centuries. The sons of the monasteries were in those days, in the broadest possible sense, "general practitioners." But the natural process of specialization was again soon manifest in this as in other departments of social evolution. In France, for instance, at the end of the Middle Ages, the work of segregation was manifested by the separation of medicine and surgery. The surgeons were, in turn, further segregated into classes, one of which was composed chiefly of barbers; other specialties, more or less crude in conception, ill-defined in limit, and inefficient in application, were developed in numbers quite as great as those which

characterized the "specialisms" of the Roman epoch. The same evolutionary changes were manifest in England and Germany; indeed, all of Western Europe was demonstrating the operation of those sociologic laws the existence and effect of which I have endeavored to emphasize in your presence to-day.

But it were impossible and quite aside from my purpose to trace the gradual development of our art along the lines which I have indicated. Modern specialism in medicine, a present product of this process of social segregation, may be said to date from the period when the French schools, in the early decades of this century, took up seriously the question of pathologic anatomy. This was the basis upon which the work of division began. The imitative Germans zealously followed the example of their more progressive neighbors of the south, with the result that to-day the great profession north of the Rhine, through the influence of specialism, has attained a dignity and a distinction which it never before enjoyed. In Great Britain the division of work, scientific and practical, was inaugurated at about the same time, although in this regard, as in others, the profession of our mother country has been very conservative. The United States, during the earlier decades of national existence, was largely controlled by European influence, at first French, then German, latterly English; while to-day she is thinking for herself and moving for herself, quite independently of foreign initiative, along the lines which make for progress. The obstetric art is as old as the function of reproduction, although the latter ages have witnessed its present refinements. It has been said "Obstetrics married Surgery, and that the fruit of the union was bright-eyed Gynecology." The accouchement probably occurred at the time Recamier invented the speculum, in 1801. Abdominal surgery had its rational beginning in 1809 under the masterly hand of the immortal McDowell, of Kentucky, and must stand as America's conspicuous contribution to surgical progress. Everything in medicine and surgery from that day to this is essentially contemporaneous history, in which occur conspicuously many of our proudest American names. But pardon these references; they are not made to revamp an old story, but rather to give force and illustration to my contention that specialism became a verity in response to natural laws which even to-day determine its destiny.

We have come to that point in our discourse when we may with propriety ask, has specialization to-day been carried to that degree that its resultant products stand without the po

tential force necessary for their further perpetuation? Is our science to-day in the imminence of a fatal equilibration? To each of these inquiries I answer "No." And I say it, too, in the presence of the fact that never before in the history of human activity, neither in Greece nor in Rome, has specialization reached its present degree of refinement. But happily the present cycle of civilization is characterized by the operation of forces which found no exemplification in the earlier plays on the great stage of the world. To-day, responsive to the edict of the gentle Nazarene, neither cloister, hall, factory, shop, college, school, family, nor profession withholds its modicum of knowledge that may make for the common weal. The proclamation of love heralded from the Mount, to-day reverberates through the nations. In conformity to natural laws, love itself has segregated into emulation, generosity, and benevolence. Herein is the corrective tendency of the specialism of to-day. It is fully exemplified in the proceedings of this and similar organizations, which meet annually to discuss the accumulated knowledge of the year, and then not only in the convention hall, but through the avenues of the medical press, to lay the matured products of their wisdom as a free-will offering upon the common altar of the profession. In this way knowledge, instead of remaining in the hands of those who evolve it, becomes disseminated for the common welfare. There is not a day but that the general medical profession becomes enriched in resource and potentiality by the accretions derived from specialism. It would seem that in this way one specialty after another must sooner or later lose its distinctive characteristics and return to the great body of the profession from which it was derived. What with our colleges, universities, clinics, hospitals, journals, and societies, the connection between the specialties and the general profession is always close and intimate. The characteristic of the present era, one that distinguishes it from former civilizations, is that the process of specialization is never carried to the point of complete segmentation. Each specialty, however assiduously cultivated, remains an integral part of the great general profession, the masters of which must ever stand as our ideals. All specialists to-day are primarily the products of general medical culture. The act of specialization takes place after, and not before, entrance into the general profession. When this order is changed, then comes the day of danger. Unlike the specialists of Greece and Rome, those of to-day are physicians and something more, and happily their influence is to make

something more of physicians. This tendency, which in Germany has come to its fullest fruition, is already marked the world over; but a few decades ago the practice of gynecology as now known and understood was in the hands of a few practitioners, to whom it brought compensation and distinction. To-day it is in the hands of the multitudes, to whom it brings neither. It may be said that the general knowledge of gynecology has gone back to the profession where it belongs. Those who remain practitioners of that department maintain their position by the joint influence of voluntary self-assertion and special adaptability. It is undeniable, however, that with reference to our own department of practice the lines are shifting. From the pelvis to the abdomen was but a natural step in the application of our surgical resource. Those who were gynecologists but a few years ago are many of them abdominal surgeons to-day, with an unmistakable tendency to become general surgeons to-morrow.

While all this is true, there remains a *raison d'être* for organizations such as this, devoted to the cultivation of special departments of knowledge; and there will continue to remain a reason for the continuance of specialists in each of the recognized departments of medical science and medical practice. This reason is to be found, first, in the highest interests of the general medical profession, and, next, in the highest interests of the masses, who are its beneficiaries. From the standpoint of the medical profession each specialty, as has already been stated, is to be recognized as an integral and organic part—a distinct member controlled by its distinct centre in the general sensorium, but a centre in thorough correlation with its associated centres. With this idea the development of a specialty is nothing more or less than the development of a particular part with a particular function—a development which tends in the direction of increasing general efficiency. No matter how generally diffused may become the knowledge of, for instance, gynecology, there will yet remain within the domain of those subjects which are capable of still further development attractive incentive for work. The cultivation of these departments must remain in the hands of those who honestly concentrate themselves upon the task. To such devotees as honestly assume this attitude and its attendant responsibilities will always be accorded recognition and reward. But the condition which can perpetuate specialism, in this or any other department, is a narrowing rather than a broadening of limits. The broadening of limits tends to ulti-

mate mergence and to homogeneity. A large number, possibly a majority, now identified with special work may elect to shift their personal activities in this direction, while there are others who, standing upon an equally strong basis of general culture, will decide to concentrate their energies in carrying to further refinement and perfection a more limited department of science. Thus, happily for the progress of the world, specialism will not disappear from society. On the contrary, specialism is manifestly to be even more distinct than in the past, while specialists, as known to the broad and progressive profession of America, will be able to gain recognition only by conforming to severer tests than are now applied. It is safe to predict, therefore, that in the not distant future there will be fewer specialists, but, happily, better ones. The lines may, and possibly will, shift. Existing specialties, or certain of them at least, through the influence of further segregation and final equilibration, may, and probably will, disappear into the general profession, while segmentation will be inaugurated at other points to result in the development of other specialties. Thus shall the great future witness the mutations of progress.

A SECOND PAPER CONTAINING REMARKS BEARING ON THE
SURGICAL TREATMENT OF INTUSSUSCEPTION IN THE
INFANT: WITH CASES.¹

BY

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(With one illustration.)

AT the annual meeting of this Society held in Toronto in 1894 I read a paper which contained remarks bearing on the surgical treatment of intussusception in the infant, and in it the term infant was used in a somewhat modified sense, being restricted to those under 1 year of age. To understand correctly my paper to-day the same application of the term is essential. The object of so doing I trust will be made apparent to you in the observations which will shortly follow.

Before confining myself to those phases of intussusception which pertain more particularly to the infant, it may not be

¹ Read before the American Association of Obstetricians and Gynecologists, at Pittsburg, Pa., September 20-22, 1898.

out of place to refer briefly to the different varieties of intussusception that occur in man at any period of life, their relative frequency according to statistics, causes, modes of growth, length of bowel involved, and acuteness or severity of attack.

Varieties of Intussusception.—For all practical purposes there are only four—namely, colic, enteric, ileo-cecal, and ileo-colic. The colic form, as the term implies, takes place in the colon. It is never acute, seldom causes complete obstruction, and the extent of bowel involved is always, or at least generally, very limited.

The enteric form occurs in almost any portion of the small intestine. It, too, is rarely acute, and, though there are exceptions, seldom involves more than a few inches of the intestine.

The ileo-cecal has its origin at the ileo-cecal valve. The valve always forms the apex or lowest point of its intussusceptum. It may be either acute or chronic, generally the former. There are instances of it on record in which, within a few hours after the onset, the greater portion of the colon became involved and the apex appeared at the anus.

The ileo-colic in some respects resembles very closely the ileo-cecal, and the two varieties are frequently confounded by writers. It differs from the ileo-cecal variety in having a few inches of the lower end of the ileum invaginated through the ileo-cecal valve. This is a very important distinction in regard to the completeness of the obstruction, the acuteness of the attack, the initial symptoms, and especially the treatment necessary to give relief. It is, in my opinion, of necessity always acute. Treves says it is the most acute and rapid form of intussusception. Its apex is the prolapsed portion of the ileum. After four or five inches of the lower end of the ileum becomes invaginated through the valve, its further course resembles very closely that of an acute case of the ileo-cecal form. It involves the lower end of the ileum and generally a large extent of colon. It has been known to appear at the anus within a very short time after the commencement of the attack. It is a very rare variety of intussusception, except in young infants, and the reason for this is apparent when we consider the difference that exists in the firmness of the structure of the ileo-cecal valve and immediate tissues in them from those of more advanced years.

Relative Frequency of the various Forms that occur at any Age.—According to Leichtenstern, the best authority on the subject, one hundred cases of the different anatomical varieties of invagination are thus distributed: ileo-cecal, 44 per cent;

enteric, 30 per cent; colic, 18; and ileo-colic, only 8 per cent. The statistics of Brunton and others very closely agree with his results.

Causes.—Authorities mention catarrhal affections of the bowel, and polypi. Dr. Robinson, of Guelph, from whom I received three of my cases, has called my attention to the fact that preputial irritation may be a factor in infancy. Certainly all the cases it has been my lot to see were, with one exception, male children who had sufficient evidence to require attention in respect to the matter.

Surgical writers frequently refer to phimosis as an important cause in the young of hernia, prolapsus ani, and hydrocele; the latter being produced by the pressure caused by the straining efforts affecting the circulation in the spermatic vessels. It is but reasonable, then, to believe that preputial irritation plays a more or less important rôle in the causation of this variety of intussusception, and the mere fact that the great majority of infants who have the trouble are males bears quite strongly in favor of this view.

Mode of Growth.—In all but the ileo-colic, after the invagination has once commenced it continues to grow, not at the expense of the upper or entering layer, but at the expense of the lower portion of bowel or receiving layer. But in the ileo-colic, for a time at least, things are different. The growth at first is at the expense of the ileum, which enters the colon through the valve.

Length of Bowel Involved.—In the colic and enteric varieties it is generally limited to a few inches, though some cases of the latter have been reported in which the amount was quite extensive. On the other hand, in the ileo-cecal, and more especially in the ileo-colic, the amount of bowel involved is often quite astonishing. Treves mentions that it is owing to the fixed condition of the colon that we have such small colic intussusceptions; but this is evidently not exactly the correct view, for in the ileo-cecal and ileo-colic varieties it is not uncommon to have more than half of the colon invaginated. May it not rather be that the completeness of the obstruction plays an important rôle in the length of the intussusception? Certainly, when the obstruction is absolute the pressure above must be greater than when such a state does not exist.

The forms of intussusception which commence in the colon or small intestine away from the ileo-cecal valve are then, with few exceptions, chronic, rarely involve much bowel, and seldom give rise to complete obstruction. On the other hand, those in

which the valve is implicated are almost invariably acute, and as a rule, to which there are few exceptions, cause complete obstruction.

Now, in infants we have only the acute forms to deal with; for when we exclude the pseudo-varieties which occur in them during the agonies of death, and which are of no practical import, we have merely the ileo-colic and possibly the ileo-cecal to consider.

All authorities agree that the ileo-colic is the most acute and dangerous form of intussusception. The reason is plain: it is the ileo-cecal variety plus the valve distended and its lumen occluded by two swollen and edematous layers of the ileum.

Notwithstanding what statistics indicate, it is my opinion that in the young infant the ileo-colic variety is by all odds the most common. It is my firm belief, too, that numerous instances of it occur in them, leading invariably to a fatal termination, without the true nature of the malady being recognized or even suspected by the attendant. When the facts having reference to the peculiarities in the infant with regard to intussusception become more generally known, it will undoubtedly be found that this form of invagination is not by any means so rare a disease in infancy as is generally supposed, and that the statistics of the future will give it a far higher standing in the table of relative frequency than it does to-day. I have seen seven cases of intussusception in the infant; all were, with one exception, in male children, and all were of the ileo-colic variety. But, what is to me peculiar, six of them have occurred almost within five years of the present time. The district from which these came has a population of less than twelve thousand. There exists good evidence and reason to believe that not as much as fifty per cent of the cases that actually occurred were seen by me. In the early years of my practice, and in fact till comparatively recently, my attention was not directed to the matter. It is, then, quite probable that other cases occurred but were not diagnosticated by me. It is not unfair for me to state that it is quite possible that other medical men have failed likewise.

The symptoms of intussusception in the infant, owing to it being always acute, are definite. The onset is sudden and it generally takes place during sleep. In six of the cases which I have had an opportunity to see it occurred suddenly during sleep, and in the remaining one, if not during it, at least within a few minutes after the child awakened from a quiet slumber.

The child awakes with a piercing cry of agony unknown to any other disease of infancy. Shortly the surface of the body becomes blanched, cold, and moistened with the clammy perspiration common to profound shock. The vaso-motor centres are so affected that, as it were, hemorrhage takes place into the internal vessels. The child may die from the effects of the shock or from the convulsions induced. Generally, however, vomiting occurs, followed shortly by reaction, and in a comparatively short space of time there may be no evidence, in the external appearance, pulse, temperature, or anything about the little one, to indicate that the child is in danger, other than possibly some tenderness on firm pressure in the region of the cecum. In less than an hour the portion of ileum which has become invaginated through the valve becomes swollen sufficiently to be detected as a small lump. After a varying lapse of time, lasting sometimes only a few minutes, at others as much as an hour or even two, the pain returns, but not with the suddenness nor with the severity of that of the onset. The recurring attacks resemble severe colic, tend as time advances to return at shortening intervals, and are frequently accompanied with vomiting, which may become stercoraceous, and with straining efforts. Within a short time of the onset, if the bowel below the obstruction contains fecal matter, we may have one or two natural movements. Then merely mucus, or mucus tinged with blood, or even pure blood may be expelled. During the first day the abdomen is not distended, and its walls are, in the intervals between the pains, relaxed. Later tympanites sets in, and still later rigidity of the walls, indicating the commencement of peritonitis. For the first thirty hours or longer neither the pulse nor the temperature may be affected. The tumor caused by the invagination is generally easily detected. It is at first very small, but increases in size quite rapidly, depending on the frequency, duration, and severity of the attacks of pain. It first exists in the cecal region, but afterward, according to the amount of bowel engaged, is found in the course of the colon. In the later periods, when tympanites is great, it may be covered by the distended coils of small intestine or forced under the ribs out of reach.

Diagnosis —The alpha and the omega of it is centred in the history of the onset. For without the initial symptoms the attendant may be likened to a ship in a storm with neither compass nor helm. In many instances the nature of the onset is sufficient for all practical purposes. If in addition a tumor

can be detected in the course of the large bowel, no room is left for doubt.

The most common error in the diagnostication is gastro-enteritis or ileo-colitis. But we have merely to compare the initial symptoms in them with those of infantile intussusception and the difficulty vanishes at once.

Treatment.—In young infants, I am convinced by my own personal experience and by perusal of considerable literature pertaining to the subject that the variety of intussusception is almost invariably ileo-colic, and hence the obstruction is of such a nature as to preclude a successful result by any other method short of operative. The reason is apparent. The tight constriction of its neck by the ileo-cecal valve causes that part of the invagination beyond it to become so swollen and tense that, in a sense, it resembles a well-hammered boiler rivet, which no evenly distributed pressure from within can force out. The peculiarly curved or hook-shaped condition of the invagination, caused by the resistance of the mesentery, adds greatly to the difficulty of its reduction by ordinary means. It is my advice, then, that, as soon as the trouble is diagnosticated, not a moment should be lost in endeavors to relieve by bowel inflation, injection, or any other means short of abdominal section. Resort to milder methods can only result in loss of valuable time and exhaust and endanger your little patient.

Method of Operating.—Make ample provision to maintain the temperature of the delicate subject, especially the extremities, and do not overlook a single factor of the usual aseptic preparations or precautions. A median incision three inches in length in my opinion is the best. Avoid endangering the high-placed bladder by not extending it too near the pubes. A three-inch incision in the infant corresponds in relative extent to a large one in the adult. When it is completed, pray do not attempt to fish out the invaginated portion with fingers, for you will find this procedure very difficult and embarrassing. Pushing the fingers first in this and then in that direction, over, between, and among the delicate coils of intestines, in futile attempts to accomplish the work, abrades the delicate peritoneum, consumes time, and frequently confuses the operator. There are valid reasons against it. In many instances, before the operation is commenced, the secondary invagination of the cecum and colon has reached the transverse colon, or even further, so that the tension produced on the peritoneum

of the posterior wall of the abdomen binds the invaginated part so closely to it that, until at least a portion of the colon is disinvaginated, the part cannot be brought out without unjustifiable force. Though that portion of the colon implicated is, as a rule, easily reduced, it cannot be done without risk till the field is open to sight. By far the better plan is to eventrate the small intestines as quickly as due gentleness will permit, and protect them with aseptic gauze, the temperature of which is maintained by irrigation with water of a suitable temperature. Very quickly this method permits the field to be cleared and allows the operator to proceed to disinvaginate under favorable circumstances. Now do not attempt to pull the ileum, but grasp the colon below close to the apex of the intussusception, in such a manner as to make pressure on it. Follow it step by step up the colon till either the whole of the large bowel engaged is free, or until the tension of the peritoneum is sufficiently relaxed to permit the remaining portion to be brought easily out of the incision. Having reduced the colon and cecum, we come to the most difficult obstacle in the operation—the invaginated portion of the ileum. It is generally so swollen and firm to touch as to resemble a solid body. Grasp the mass in one hand and make firm pressure for a few minutes. Then take it up in such a manner that the thumbs make pressure upon the apex while the fingers surround the outer orifice of the ileo-cecal valve. In other words, you reduce it in a similar manner to that advised in surgical works for paraphimosis. Of course there is the difference that the large bowel covers the part from view. When reduction is almost completed, but not until then, it aids and hastens the work to pull carefully on the ileum.

The lower part of the ileum after the part has been disinvaginated is often quite blackish in color, furrowed in places, and has patches of its peritoneal coat wanting. It is really astonishing, in regard to it, what Nature under favorable circumstances can accomplish. It is my custom, before replacing the bowel, to force the contents in the healthy portion of the ileum above through the affected part into the colon. This proves that the obstruction has been effectually overcome and insures an early movement of the bowel; besides, it in no small measure hastens recovery by getting rid of offensive germ-laden material from the system. The intestines are returned to the abdomen, the omentum spread over them to prevent bowel adhesion to line of wound, and then the incision is closed without

drainage. It is better to cover the dressing with oiled silk, the edges of which are sealed to the abdomen with collodion in order to prevent the urine of the child reaching the cut. If it is found in any case impossible to reduce the portion of ileum which is invaginated through the valve, it would be well to adopt the method advised by Mr. Bernard Pitts, of London, England, in the *Lancet* of June 12, 1897. He sutures the ileum at the neck of the intussusception to the cecum, then opens the cecum and cuts off the invaginated portion close to the inner side of the valve.

In my last paper I reported three cases of infantile intussusception. The parents of one refused operative measures and the child died. The others were saved by resorting to the measures stated above, with the difference that in each case an attempt was first made to relieve by bowel inflation or injection. Since that time four cases have come under my notice. Two were operated upon by myself and recovered. One died shortly after the onset, before anything could be done; he died from the convulsions induced. The fourth I saw in the practice of another surgeon, through whose kindness I was present at the operation.

Dr. Robinson has kindly furnished me with notes of the two last cases which were saved by operative measures. I give them in his own words.

CASE I.—About 11:30 A.M. on September 17, 1897, I was called to see J. McT., age 5 months and 20 days. On questioning the mother the following facts were obtained. From birth the child had been perfectly healthy and had never had any catarrhal irritation of the bowel. A little after 9 o'clock that morning he had lain down to sleep, as was his custom. An hour afterward the nurse was startled by the child awakening out of his sleep with an unusual scream of agony. Presently the child became pale and cold; at the same time the surface of the body was moistened with perspiration. His mother, who was absent at the time of the attack, on entering the room noticed a marked change in her son, became alarmed, and sent for me. In the meantime reaction set in, but before it became established he gave several sharp cries of pain.

On my arrival, an hour and a half after the onset of the attack, there were no symptoms of a serious nature to indicate that there was anything wrong with the child; but from the history of the attack I suspected an invagination of the bowel—a possible condition, notwithstanding that I failed, although

a careful examination was made, to find a tumor. The mother was informed that if my suspicions were correct we would presently expect recurrence of pain and probably bloody stools. I then left, promising to return in an hour or two, but was called to another part of the city and detained there until 4 P.M. Early in the afternoon severe colicky pains set in, and at 3 o'clock a discharge of mucus tinged with blood was expelled. In my absence Dr. A. Mackinnon was called, who concurred with my diagnosis and recommended an operation. By this time the tumor could be readily felt above the umbilicus. The child was at once taken to St. Joseph's Hospital and preparation was made for the operation, which was performed by Dr. Howitt, assisted by Dr. Mackinnon and myself. No attempt was made to reduce the invagination by bowel inflation. The form of intussusception was ileo-colic.

The recovery was uneventful and the little one left the hospital on the tenth day, and, with the exception of an attack of measles, has enjoyed perfect health ever since.

CASE II.—On the morning of April 20, 1898, I was called to see Carl Wakefield, age 5 months and 20 days. On arriving at the house I obtained the following history from the parents. From birth the child had been particularly healthy, except that on three separate occasions it had "cramps" for several hours, causing considerable pain. On each occasion relief soon followed a dose of soothing syrup. The child was nursed by its mother, and in addition was fed boiled bread and water, biscuits, sago, and latterly a few potatoes.

On the evening previous to my visit the child was put to bed apparently in the best possible health, and slept quietly until midnight, when it suddenly awoke screaming and with every symptom of violent pain. He vomited almost immediately a yellowish-green fluid, and the mother noticed that his face and body were deadly pale and that a cold, clammy perspiration stood in drops on his body, hands, and feet; the lips were colorless, and the child looked like one dead. Nothing seemed to give relief from the intense pain. About 2 o'clock A.M. a movement of the bowels occurred, quite natural in appearance and large in quantity. The pain seemed even worse after this and the vomiting still continued at intervals. At 3 o'clock a considerable quantity of bright-red blood mixed with a little mucus passed from the bowels. After this the pain was easier and the child slept for short intervals until about 6:30. From this hour until about 8:30 the suffering was very great. I saw the patient about 9:30 A.M. in one of his easy spells. The condition of the child was good, but on making a careful examination I

indistinctly felt in the epigastric region a tumor apparently the size of a hen's egg. I was not able on a second examination to feel the tumor, nor did I feel it again even when the child was under an anesthetic. The diagnosis to me seemed clear, especially from the history of the case. I recommended an operation and asked for a consultation with Dr. Howitt, who saw the case with me about 10 o'clock and concurred in the diagnosis and treatment recommended. At 12.30 a second bloody stool mixed with mucus took place. The child was removed to St.



Joseph's Hospital and was operated on by Dr. Henry Howitt about 5 P.M. The variety of invagination was ileo-colic.

The recovery after operation was uneventful; the first few passages from the bowel were bloody, but on the second day an enema was given and a natural motion of the bowels took place. In about one week's time the sutures were removed, and on the tenth day from the operation the child was removed from the hospital and has remained in perfect health up to the present time.

In order to emphasize a difficulty in the diagnostication, let me state here in regard to the last case that neither at the time of consultation nor when the child was under the anesthetic on the operating table could I detect the tumor; what is more, on both occasions, when we leave out the history of the case as given by the medical attendant and parents, there was not a single symptom pointing to intussusception or any other trouble. In fact, when the child was placed on the operating table he was smiling and cooing, and to all outward appearance in the best of health.

These, with the two cases reported in my last paper, make four consecutive successful operations for intussusception in infants by me, all in little ones 6 months of age.

From the photographs of the children taken recently it will be readily perceived that in the one in whom the operation was performed a year ago the line of incision can hardly be traced, while in the other, whose operation dates back only five months, the line is quite distinct.

The following are notes of the other cases of infantile intussusception to which I have already referred.

Early in the morning of the 2d of November, 1897, as I was leaving my office to make a call, Mr. C., who lives a short distance from where I reside, met me and requested me to come at once to see his child, a male infant about 6 months of age. My arrival could not have been more than fifteen minutes after the onset of the attack. The mother told me that the child had awakened early that morning and had appeared to be in excellent health—laughed and played with his feet as infants are accustomed to do. After the mother arose, and while she was dressing, the child fell into a sound slumber for twenty minutes; it then suddenly gave a piercing cry, writhed in agony for a few minutes, and then fell into a state of profound collapse.

On my arrival the child's lips were blanched and the surface of the body was cold, pale, and in parts moist. The action of the heart was rapid, but no pulse could be detected at wrist. The child was quite limp and made no voluntary effort of any kind. The peculiar onset led me to suspect intussusception. On examination I detected a small nodule in the cecal region; pressure on it seemed to rouse the child somewhat, for it made feeble efforts to resist, and twitching of the distant muscles was noticed. Advising the parents to apply warm cloths to the extremities and body, I left, attended to my first call, and was making preparations at my office with a view of operating

when the father called and told me that the infant was dead. Half an hour after my departure from the house the child took a convulsion, from which it never rallied. Death occurred within two hours after the first symptom of the trouble commenced. The parents refused to permit me to open the abdomen, but I had an opportunity to examine externally almost immediately after death. There was no difficulty whatever in defining an oval-shaped lump in the situation of the cecum. There is no doubt in my mind as to the nature of the trouble. The child had been in excellent health up to the morning of his death. The prepuce was long and adherent and had a minute orifice. It is my belief to-day that had an opiate been given at the time of my first visit the child would have had a chance to be saved by operative means.

The remaining case occurred in the practice of a confrère of mine, who requested me to be present at the operation. The infant was a female, age 4 months, who had been previously healthy. The attack commenced in a manner similar to those related above. It took place on March 31, 1897, and on the morning of April 2—or, in other words, the third day of attack—the child was taken to the Guelph General Hospital and the operation performed by the doctor. The invagination had extended to the middle of the transverse colon. When the disinvagination of the portion of the large bowel engaged was almost completed, the colon unfortunately gave way and a rent was made in its anterior surface extending fully three inches upward from the cecum. After reducing the invaginated ileum, the doctor closed the tear with interrupted silk sutures, tying each when introduced. The consequence was that the line of the closed wound when completed ran obliquely across the colon and completely occluded the lumen of the bowel. He had no other resource left than to anastomose the ileum above to colon below the suture line, which he did with a Murphy button. The child never rallied, and died three hours after leaving the operating room.

The table on page 629 shows all the cases of infantile intussusception which have come under my notice, with other particulars. They are given in the order as to date in which they occurred.

In conclusion, permit me to repeat a statement which I made in my first paper on the subject—namely, that more instances of intussusception are overlooked in infants than at any other time of life. This is not a random statement, nor should the reason be difficult to understand. The little patients cannot convey to those around a single particular concerning the pain

Initials of patient.	Sex.	Age.	Date of attack.	Treat-ment.	Attendant or ope-rator.	Date of opera-tion.	Result.	Date of death.	Remarks.
W. C.	M.	2 months, 28 days.	July 2, 1888.	Opera-tion.	Self	July 4....	R.	.....	Left hospital on tenth day.
B. W.	M.	5 months, 15 days.	July 17, 1893.	Medical.	Dr. W. O. S.	.....	D.	July 20, 1893	P. M. proved diagnosis.
F. L.	M.	5 months, 27 days.	April 20, 1894.	Opera-tion.	Self	April 21..	R.	.....	Left hospital on tenth day.
— B.	F.	4 months	March 31, 1897.	"	Dr. W. F. S.	April 2...	D.	April 2...	Death due to accident during operation.
J. McT.	M.	5 months, 20 days.	Septem-ber 17, 1897.	"	Self	Septem-ber 17.	R.	.....	Left hospital on tenth day.
J. C.	M.	6 months.	Novem-ber 2, 1897.	.....	" ....	.....	D.	Novem-ber 2.	Died within two hours of onset from convulsions.
C. W.	M.	5 months, 20 days.	April 20, 1898.	Opera-tion.	"	April 20..	R.	.....	Left hospital on tenth day.

and other symptoms that distress them. Frequently the severe initial signals of danger pass off in a comparatively short space of time, and so completely that the alarm of the friends is quite allayed. On the arrival of the medical attendant there may be absolutely no indication pointing to either intussusception or any departure from health other than the history of the onset, which in the confusion the friends may fail, in telling, to properly emphasize. Even when the symptoms of the onset are described in graphic language, the doctor, finding the child apparently in excellent health, may quite easily underestimate their importance. Then it is not difficult to perceive how readily the recurring colicky attacks of pain that sooner or later appear may be masked by sedatives or mistaken for the result of less grave maladies of the bowel, till the opportune time to call the surgeon is past.

When the general practitioner fully comprehends the import of the history of the onset of intussusception in the infant, there will be fewer deaths recorded to certain bowel affections and more lives saved by surgical means.

Look at the history of appendicitis, once an almost unbroken line of deaths from peritonitis. Light came, and to-day, in regard to it, competent surgeons have effectually routed death and, in a sense, robbed the grave.

235 WOOLWICH STREET.

SEPTIC INFECTION OF OVARIAN CYSTOMA.¹

BY

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THE question of suppuration arising in either simple or dermoid cysts of the ovary is one that has only been talked of by gynecologists within the last fifteen years, although long before that time a few cases are to be found scattered throughout medical literature, and it appeared to the writer that a general consideration of this rather important question of abdominal surgery and gynecological pathology might not be out of place at this time.

The advance made in abdominal surgery and bacteriology has at the present time put the question of suppuration of ovarian cysts quite well forward, and in the recent and excellent text books on gynecology by Keating, Penrose, Webster, Garriques, and other writers, all mention this complication, but do not give it the prominence to which we think it is entitled.

Pathologically, ovarian cystoma may be divided into epithelial and dermoid cysts. If these cysts are situated in the ovary they are called ovarian, while if they are included in the parovarium they are termed parovarian cysts, and according to the case they either have or not a pedicle. If their cavity is composed of a single pocket they are termed unilocular, but, on the contrary, when the walls are adherent and the cavity composed of a number of small pockets they are termed multilocular cysts.

The wall of an epithelial cyst is made up of two layers—an external layer which is extremely dense and composed of fibrous tissue which is poor in cellular elements, and is lined by a cubic epithelium which differs from the flat endothelium of the peritoneum. The internal layer of the wall is well provided in cellular elements and blood vessels, and is lined by an epithelial layer comprising a few elastic fibres. Between these two layers a third one is to be found, to which the name of cellulo-vascular layer has been given. The contents of these

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cysts are liquid and usually a light yellow or slightly greenish in color, but in certain examples the contents may be a reddish-brown or chocolate color. The consistence of the liquid varies from that of serum to the thickness of gelatin.

The wall of a dermoid cyst is a structure very similar to that of the dermis of the skin, and contains unstriated muscle fibres, blood vessels, nervous elements, papillæ, sebaceous glands, and hair follicles. Their contents are made up of sebum mixed with epidermic products.

Now, if we admit that these cysts, either of the epithelial or dermoid type, undergo an inflammatory process, the result will be a suppuration of the cysts. Pus may exist in a large or small quantity, according to the size of the cyst and according to whether one cavity or only a few of the smaller ones contain this pathological product. Sometimes it is greenish, at others yellow; sometimes it is dirty, with only a slight odor, while in other cases it has been found of a creamy consistence with a very strong odor. When submitted to bacteriological examinations the pus has been found either free from micro-organisms, in which case it was sterile, or, on the other hand, micro-organisms were present.

Sterile pus has been the least frequently met with in cases of suppurating ovarian cysts. In one case reported by Fraisse and Legrain in 1892 an ovariectomy was performed and fifteen litres of pus withdrawn, and neither by staining nor by culture on various media, nor by inoculation of guinea-pigs under the skin or intraperitoneally, could the presence of any bacteria be demonstrated.

Pus containing bacteria is by far the most frequent, the streptococcus and all the staphylococci being found. Bumm reports a case which he observed, in which by culture he demonstrated the presence of streptococcus. Schipervitsch, Werth, and very recently Keen, of Philadelphia, in his important monograph on the "Surgical Complications and Sequels of Typhoid Fever," have all contributed cases in which Eberth's bacillus was found in the pus. Madlener has reported one case of suppurating cyst of the ovary in which Koch's bacillus was found, while Schauta reports one in which diplococcus of pneumonia was present in the pus.

In 1893 Bumm made cultures from the pus taken from an ovarian cyst, and found organisms which were apparently the bacterium coli and staphylococcus; and Mangold in 1895 describes a case in which he also was able to demonstrate the presence of a staphylococcus, bacterium coli, and an organism

which resembled the gonococcus. In most cases the walls of the cyst will be found to have undergone a certain number of changes macroscopically. The walls may be found either thin or thickened; there may be an unequal consistence in different parts; other cysts may be found softened and perforated, while still others may be found covered with small vegetations. In some cases the internal surface of the cyst wall was found covered with a layer of fibrin, while the external surface of the wall showed a partial desquamation of the epithelium, and thus we may explain the possibility of the formation of adhesions taking place by means of friction.

Microscopically various conditions of the walls may be found. In some cases sarcomatous degeneration of the wall has been recorded. In other cases the microscope showed typically a tubercular follicle with nuclear zones grouped around a giant cell. In a case reported by Bumm the connective tissue making up the wall was found infiltrated with small cells. Sections colored with methylene blue showed the presence of bacteria, among which groups of cocci and bacilli were found.

As to the lesions which are present in the neighborhood of the cyst, we may mention, in the first place, ascites, which usually is not very abundant, and also peritonitis, which may either be generalized or localized. In an infected focus such as we have in the suppurating ovarian cysts we can readily explain the continual inflammatory attacks which occur. Localized peritonitis is by far the most frequent, and it is this process that gives rise to the formation of adhesions which bind the growth to the surrounding parts, such as the intestine, the abdominal wall, or the mesentery. These adhesions may be very extensive, thick, and their vascular supply is very abundant.

In a case reported by Page an abscess of the cellular tissue in the retrocecal region was found. In a case reported by Féraud there was a cystocele, rectocele, and an increase in the prolapsus of the uterus which was present. In most cases the uterus will be found high up in the pelvis, and in most cases it is pushed either to one side or the other. A certain number of cases of perforation of the intestine have been mentioned. The diaphragm is often hindered in its respiratory movements, and the iliac vessels and the vena cava are frequently compressed. Pressure of the lumbar plexus and the sacral plexus may be of a sufficient intensity to produce the lesions of peripheral neuritis in the lower limbs, resulting in a very marked muscular atrophy. In one case reported by Féraud a pleuritic collection

on the left was found, and the reporter considers it as due to a hindrance in the lymphatic circulation of the abdomen.

In considering the pathogenesis of septic infection of ovarian cysts, the first question to be considered is whether the liquid contents of the cyst, before infection by foreign elements has taken place, does not contain its micro-organisms, which would almost surely end in a suppurative process. Clinically we may deny this, because if such were the case every ovarian cyst would naturally end in suppuration. And, what is more, if it be admitted that the liquid contents of a cyst, before any contagion has taken place, are already septic, how can we explain these cases of rupture into the peritoneal cavity which will neither result in inflammation nor in symptoms of infection?

Bogdanick has reported the case of a very large ovarian cyst which contained twenty litres of fluid and which ruptured into the peritoneal cavity after traumatism. Abdominal section showed that there were two rents in the cyst wall, measuring several centimetres, one being on the anterior aspect, the other on the posterior aspect of the cyst. Careful examination failed to reveal the slightest traces of peritonitis, and the patient was perfectly well two weeks after the accident.

Lannelongue mentions another similar case. A woman who had an ovarian tumor was twice tapped in order to withdraw the liquid contents, but the cyst soon refilled and the patient entered the hospital. On account of the persistency of the fluid Lannelongue decided to operate, but before doing so he wished to keep this patient under observation for a few days. But his surprise was great when, on the day after the patient's entrance into the hospital, he found that the cyst had collapsed and that symptoms of a peritoneal collection had suddenly taken the place of those given by the cyst; and in fact during the night the latter had burst and had emptied its contents into the peritoneal cavity. There was no reaction, no vomiting, and no pain after this rupture. The liquid became progressively absorbed, and six months later the patient was found in good condition. The abdomen was soft and the vaginal culs-de-sac were perfectly free.

If we now examine the experimental side of the question, we will find still more proofs of the perfect asepsis of the liquid contents of these cysts. This has been demonstrated by Chauffard and Widal, more especially in cases of hydatid cysts, but they have also demonstrated it in ovarian cysts. Knowing, then, that the liquid contents of these cysts is aseptic, we might ask the question whether this liquid itself might

not be a good culture medium for bacteria when they gain entrance within the cyst.

The above-mentioned writers have made comparative inoculations of peptonoid beef tubes and in tubes containing the liquid contents of a cyst. These experiments, which were carried on with the staphylococcus and streptococcus, the bacterium coli and the bacillus of typhoid fever, showed that the tubes containing the fluid from the cyst, as well as those containing the peptonoid broth, gave beautiful cultures of the various organisms inoculated.

From the above-mentioned facts it may be said that if the liquid contents of an ovarian cyst are not contaminated by bacteria they will remain aseptic and will undergo no change; but if, on the contrary, microbes attack a cyst and enter it, its contents will serve as an excellent culture medium and symptoms of infection will soon appear. But the human organism will take on the offensive and will react against the bacteria which have infected the cyst; leucocytes come through the walls of the vessels and attack the invading microbes, and thus we have the transformation into pus of the liquid contents.

It is well known at the present time that suppuration is not to be considered as a special reaction of the organism, produced by certain infective germs; and also it is known that it is not confined alone to certain types of bacteria, and that it is a simple pathological process. The most varied kinds of bacteria may produce it, be they pathogenic or saprophytic. Thus, for a suppuration caused by pyogenic organisms other than the staphylococcus and streptococcus, we know that suppurating meningitis is produced by pneumococcus, that the gonococcus will produce a suppurating arthritis, that empyema can be produced by the bacillus of tuberculosis, and that the bacillus of typhoid fever can produce osteomyelitis. In the case of saprophytic infection, in order that the liquid contents of an ovarian cyst be preserved from purulent changes, it is necessary that it remain free from both pathogenic and saprophytic organisms, and if they find entrance they are the cause of suppuration.

From what we have said we may conclude that we have two kinds of septic infection of ovarian cysts—viz., the pathogenic infection and the saprophytic infection.

Pathogenic and saprophytic organisms enter ovarian cysts in various ways. Puncture, incision, and drainage are often the means of their direct invasion from the exterior; and we should always bear in mind that the deep layers of the epidermis contain bacteria in large quantities, more particularly the

staphylococcus albus, the latter presenting a very great resistance to all manner of disinfection, and which by the above-mentioned operative interference may be pushed directly into the interior of the cysts. But in a great number of instances, as puncture is discarded by the majority of the profession, the patient contains the agent of the septic process under consideration. The germs did not come from without, but from the interior of the organism, and it may be called a true auto-infection, which can take place in one of three ways: Firstly, by means of the blood, in which case the infection is either direct, produced by phlebitis which extends up to the cyst, or it may be indirect, in which case the infectious elements are carried in the general circulation into the tumor by means of its pedicle. Secondly, infection may take place by the lymphatics, in which case the lymphatic channels act as the contaminating canals and allow a direct introduction of the germs into the interior of the cyst up its hilum. Thirdly, we have infection through adhesions, which are plentifully supplied in new-formed vessels which are intimately connected with those in the walls of the cysts and thus allow an easy transportation of the bacteria.

Thus let us suppose that a woman with an ovarian cyst becomes stricken with an intercurrent infectious disease; by the indirect way of the blood, by the aid of a branch of the abdominal aorta, the utero-ovarian artery, the septic matter may be brought to the cyst and infection result. Thus we have on record cases in which influenza, typhoid fever, gonorrhea, tuberculosis, and pneumonia have been the cause of septic infection of ovarian cysts. In other cases puerperal infection, septic remains of an abortion, have probably produced suppuration in the cyst by means of an infecting phlebitis—*streptococcus phlebitis* of the uterine veins extending as far as the pampiniform plexus, and from there reaching to one or several veins in the wall of the cyst by the lymphatics. The lymphatics of the uterus form an anastomosis with those of the ovary, and thus we have a direct route free for the invasion of the cyst by the pyogenic germs. In other cases the adhesions may probably furnish the means of transport for the organisms, and in one case infection took place from a cystitis. Adhesions with the intestine or appendix may permit of the arrival of saprophytic germs into the cyst, these saprophytes always existing in large numbers in the intestinal cavity.

Sutton, Giles, Pozzi, and others believe that infection is possible by adhesions with the tubes in cases of pyosalpinx.

Keating and Coe have put on record a case in which infection took place by means of adhesions binding an inflamed appendix to the ovarian cyst. These three routes of infection being admitted, it is quite logical to ask if there are not other circumstances which may favor infection.

Locally traumatism, the injection of corrosive substances such as iodine, torsion of the pedicle—which, on account of the vascular and nervous phenomena which it brings about, weakens the cell elements—alter vitally the tissues and thus render them less apt to resist microbe invasion. In one case sarcomatous degeneration of the walls of the cyst, producing a *locus minoris resistentie*, was the cause.

Thrombosis of the vessels of the cyst wall is not in all probability a factor in the production of simple rupture of ovarian cysts, but hemorrhage due to a papillomatous change is important, because a slight disturbance in the circulation or a hemorrhage is alone quite enough to set up inflammatory phenomena in a cyst, or even gangrene. Cases are on record in which both suppuration and gangrene have resulted after hemorrhage into the cyst had occurred.

In other cases pregnancy or labor has played a large part on account of the abdominal congestion produced, as well as by the contusions that the cyst received during gestation or labor.

Labor and the puerperium certainly offer great opportunities for septic infection or gangrene of ovarian cysts. This is especially true of pressure or laceration of the tumor during labor itself. The application of the forceps or manual extraction of the placenta, with the added possibility of infection from the lochia, an endo-, peri-, or parametritic inflammatory process, are factors enough, each one of which is in itself sufficient to cause septic infection of an ovarian cyst.

The danger is still more increased when the tumor is a dermoid, or if during labor perforation of the cyst takes place; and, previous to a labor or miscarriage, gestation alone plays quite a large part as a predisposing factor to inflammation generally.

Mangold states that bacteria may enter a cyst by direct transportation through the venous circulation in cases of septic puerperal uterus, while, on the other hand, Bouilly believes that the bacteria are transported through the lymphatics of the ovarian ligament from the infected endometrium. For the same reason hyperemia of the pelvic organs and menstruation may facilitate infection. During the menses it may happen

that the reflux of the blood may introduce germs, which normally are present in the vagina, into a previously aseptic uterine cavity.

The germs usually found in the vagina are certain diplococci, several varieties of staphylococci, and occasionally streptococci, and when once these organisms have entered the uterine cavity we can easily see how they may attain a cyst.

This theory has been put forward by Schauta, and he says that the process which takes place in cases of gonorrheal peritonitis may also be applied to the infection of ovarian cysts. In the former case the gonococcus is deposited in the vagina, and he can only extend his territory by means of segmentation. The internal orifice of the cervix forms a hindrance to the entrance within the uterine cavity of the secretions of the cervix, but during menstruation the transportation of the gonococci may take place by means of menstrual reflux. If to menstruation we add coitus practised during this time, we certainly increase the chances of infection. In the first place, the congestion within the abdomen is increased, and during the venereal spasm the contractions may possibly produce a certain degree of aspiration from the vagina toward the uterus.

Mangold is also of the opinion that coitus during menstruation or the puerperium is an etiological factor in septic infection of ovarian cysts, while, on the other hand, Bouilly affirms that he has never seen a case to which the above theory might apply.

The general condition of the patient may also have its influence. Debility, intoxication of the organism, or bad hygienic surroundings will certainly place the organism in a more marked state of receptivity, and both pathogenic and saprophytic organisms make greater havoc in such people. It is also very probable that certain infectious diseases in which the specific microbe has been demonstrated in the pus act in the same way, the suppuration in the cyst being, so to speak, a secondary infection arising in a weakened organism.

The pathogenesis of aseptic pus of ovarian cysts only means that it is a different stage of the same process, because in the beginning of the lesion, in all probability, the pus contained bacteria. The same ways of infection, the same determining causes which predominate, are also present in cases in which the pus is aseptic, and if bacteriological examination demonstrates that the pus is free from organisms, it simply means that they have disappeared or that they have already died off and can no longer be grown on artificial media nor can be seen microscopically in stained specimens.

We have nothing new in the above fact, and the same phenomena take place in abscess of the liver as well as in certain purulent foci produced by the tubercle bacillus. Why the bacteria die is as yet an open question, but nevertheless it is certain that this is the case.

Regarding the symptomatology of ovarian cysts, we may say that they give rise to local and general phenomena. Local phenomena are not identical when the cyst is in a latent and when it has arrived at what may be termed the pelvic or abdominal state. In the beginning there are no marked signs, and disturbances of the menstruation and indefinite pains in the lower abdomen have only a very slight value. Later on, by palpation, we can distinguish a growth which is seated laterally and extending more or less beyond the median line. The area over the tumor gives dulness on percussion, while sonority will be found all around it.

If the cyst is very large and unilocular, fluctuation may sometimes be easily made out. If the cyst is a multilocular one we will find by palpation an irregular tumor covered with bosses, while attentive examination will show in many cases that in certain parts of the cyst fluctuation is present while in others it may be wanting. As long as the tumor remains in the pelvis an elastic and resistant mass, which is independent of the uterus, may be easily found by manual palpation; or when the cyst has become large and has extended up into the abdomen, we may no longer be able to reach it by the vaginal finger, and it will reveal the fact that the cervix uteri is high up and reached with difficulty. The abdomen increases in size, while the lateral projection becomes more pronounced in the middle line and may extend up as high as the false ribs, pushing back the diaphragm; the bladder, rectum, stomach, uterus, iliac vessels and the vena cava, and the sacral and lumbar plexus show signs of compression. The general health of the patient begins to deteriorate. The general symptoms produced by ovarian cysts is difficulty in breathing, producing dyspnea; dysuria, incontinence of urine, vomiting, constipation or diarrhea, symptoms of chronic uremia, edema, and more or less violent pains are present; pronounced loss of flesh, with a peculiar expression described under the name of "ovarian facies," is also to be noted.

If we consider the symptoms presented by an infected cyst, we should immediately ask if there are any phenomena, either local or general, which may facilitate a diagnosis that suppuration has taken place. Generally speaking, this cannot be

done, and it may be said that there is no symptom which in itself can indicate to the surgeon that an ovarian cyst has become infected. But there are certain symptoms which may possibly help us in making a diagnosis when septic infection of a cyst has occurred, besides the symptoms of cysts generally speaking. As local phenomena we will have rapid increase in size of the abdomen, and accompanying this there will usually be a development of the subcutaneous veins. The patient will complain of very sharp, nearly continual pains in the abdomen, which may be either spontaneous or produced by the slightest provocation. Ascites may be present, but more usually there is peritonitis. The tumor will be found only slightly movable, and fluctuation is not often so marked as in ordinary cysts, on account of the greater density of the fluid contents.

As Penrose has pointed out, a suppurating ovarian cyst may sometimes contain gas, either from communication with the intestine or from decomposition of the contents, and in such cases the usual tumor dulness will be replaced by a tympanitic note. But when infection has occurred the general phenomena are by far the most important: the health is rapidly undermined and the patient loses flesh, the mucous membranes are pale, and the skin has a cachectic color; edema, great thirst, and profuse perspiration during sleep are complained of; in most cases fever is continuous, the mercury marking in the neighborhood of 38.5° C., with an evening rise and morning remission. In other words, we have the classical picture of septicemia. Anorexia and vomiting has been noted in a number of cases. In some it occurred and later on the cyst perforated, its contents being emptied into the general peritoneal cavity. But in many cases no rupture had taken place and the vomiting must be wholly attributed to septic infection of the neoplasm. Vomiting was present in some instances at the onset or some time before the septic process was diagnosticated, while in others this symptom first appeared during the course of complication and when there were a number of symptoms indicating the presence of suppurative phenomena.

When vomiting is present it is usually persistent and severe, or even incoercible. The vomitus may be greenish in color, or the coffee-ground type may be present in some cases. Nausea often precedes vomiting, either with or without rupture of the cyst having taken place; and in one reported case, where nausea without vomiting appeared some time before the symptoms of septic infection of the cyst, necropsy revealed the presence of an old gastric ulcer.

Diarrhea has been noted in many cases, with or without rupture of the cyst; it may occur at the onset or during the course of the septic disturbances. It may also give place to constipation. In one case constipation appeared at the onset, and then a severe diarrhea was substituted which lasted several weeks. Constipation, which is often quite obstinate, may be present instead of diarrhea, and may occur at the onset of the septic process.

Insomnia, or even delirium, and later on, if the case goes badly, there will be a profound prostration and semi-coma. Albumin may be present in the urine, and indol will nearly always be found if looked for.

Dyspnea is quite frequently present, and may precede the septic phenomena or appear at the onset and continue throughout the progress of the septic complication. Broncho-pneumonia and pleuritis (metastatic?) have been reported, and in these cases it was due to a compression of the lung, one of which presented adhesions and an inflammation of the diaphragm. The dyspnea may be accounted for in some cases on account of the acute purulent peritonitis following rupture of the infected cyst.

Indicanuria may, according to Kielman, have considerable diagnostic value, and he says that it occurs regularly in all cases in which there are purulent collections in the body, and may consequently be considered as a very valuable sign, proof that there is a latent suppuration present. Personally, in two cases of infected ovarian cysts we have found indol present in the urine. As rare complications of septic infection of ovarian cysts we may mention edema of the external genitals, of the lower extremities, phlebitis with or without rupture of the cyst; metastases in various joints, and ileus, have also been reported.

The diagnosis of septic infection of ovarian cysts is not easily made, and we should always have present in our minds the various diseases which may simulate this condition. We should consider two classes of conditions—viz., those in which the infected cyst presents only the symptoms of an ordinary cyst, and, secondly, those in which the suppurating process manifests its presence by local and general symptoms which are more or less marked. In the first case it is impossible to make differential diagnosis with a simple cyst of the ovary, because examination and symptomatology are identical in both instances; and for this reason a septic infection of a cyst may be mistaken for various other affections which are similar, in their symptoms to ordinary ovarian cysts.

In ascites the shape of the abdomen is not the same, because the flanks have a perfectly symmetrical projection. By percussion we find dulness, which is replaced by a tympanitic note when the patient changes her position. Hydrosalpinx usually gives rise to an exquisite pain, which is sudden and localized in the region of the diseased organ; and thus we are always able to elicit more former trouble of the genital apparatus in the patient. A fibrocystic tumor of the uterus will show by palpation that the tumor is firmer than an ordinary cyst; it is directly connected with the uterus and participates in all the movements given to that organ. A unilateral hydronephrosis would naturally give rise to serious troubles in the urinary apparatus. And, lastly, in cases of cysts of the mesentery or of the liver, the surgeon should remember that in such cases the tumor develops from above down and is independent of the genital organs, whereas in the class of cases that we have now to examine septic infection of the cyst is accompanied by special symptoms. Nevertheless the diagnosis may be very uncertain. When the cyst, during its latent period, gives rise to no local symptoms, but has already produced toxic symptoms in the body, the question of a typhoid fever, an acute miliary tuberculosis, or some infectious disease may be considered, and such cases have been reported by Féraud and Goodell; and it is only by the local manifestations of the growth that all doubts may be removed as to the real cause of the trouble.

When we are dealing with an infected cyst which is situated high up in the pelvis or high up in the abdomen, it may be mistaken for a large number of conditions, and, in the first place, we should consider the question of a malignant transformation of an ordinary cyst of the ovary or a neoplasm of this organ. In these cases we find locally by palpation that they are harder, more consistent, and firmer tumors than in cases of an infected ovarian cyst, while the general symptoms in most instances are less acute and less rapid. If the malignant process has extended we will certainly find enlarged lymphatic glands. Cases of torsion of the pedicle have, like suppurating ovarian cysts, a rapid increase in size of the abdomen and a sudden and very sharp pain, but there are two important signs, which have been described by Reboul, which will allow of making an exact diagnosis before operating, and these are: first, by auscultation a systolic souffle will be heard, situated over the painful point (that is to say, over the pedicle of the cyst); and, secondly, by palpation we will have a movement

en masse of the tumor, which gives the sensation of heaving, which coincides with the arterial pulse.

In cases of suppurating ovaries or pyosalpinx we will be able to elicit former disturbances in the adnexa, while suppurating hydatid cysts of the ovary, which are only mentioned here more as a curiosity than anything else, will give rise to the characteristic trembling which is found on palpation in these cases. Intestinal occlusion begins very suddenly, and soon the abdomen increases in size. A tympanitic note will be found everywhere, and the distended intestinal coils may be outlined through the abdominal wall in these patients. Fecal vomiting and absence of feces and gas per rectum, with cold skin and lowered temperature, are sufficient signs for the diagnosis.

In the generalized peritonitis the pain extends over the entire abdomen and produces severe pain, vomiting will occur, and abdominal palpation is impossible, and if vaginal examination be made no sign of any tumor will be present. Fever is high, temperature reaching at about 40° C. without any morning remission, and if, in a case of infected ovarian cyst, it remains continually up, in peritonitis we must have at a given time a decrease by lysis.

The differential diagnosis with encysted peritonitis is most difficult, especially when the collection is considerable in amount. The means for differentiating are not very numerous, and Spencer Wells says that he knew none. However, a certain amount of information may be drawn from the irregular shape of the abdomen, with a more marked projection in a given direction while the rest of the abdomen remains depressed, and also the history of a slowly progressing disease with former attacks of peritonitis and the peculiar sensation given by the intestine on palpation.

Periuterine hemocele which has undergone an inflammatory process will reveal to the examining finger within the vagina a swelling which fills Douglas' pouch.

When we are dealing with an abscess of the broad ligament we have one pathognomonic sign, which is the "abdominal plaque," and is felt as a hard and resisting mass situated deep in below the abdominal wall and projects immediately above the crural arch.

Abscess of the iliac fossæ is apt to be adhering to the integuments, and is felt superficially independent of the deep organs.

Generally speaking, the prognosis of the septic infection of ovarian cysts is serious. If the ordinary cysts are themselves serious, if they produce serious symptoms, if, on account of

their epithelial nature, they are, so to speak, balancing between virulence and perfect innocuity, it must be remembered that in cases of infected cysts the chances of a fatal termination are very much greater. Patients who are subjects of infected cysts of the ovary run great dangers, and before surgical interference became a current practice in this class of cases death was the most frequent outcome.

Such a large quantity of pus as is found in suppurating cysts is with difficulty supported by the human organism, and the disorders that it produces are too considerable for a body to resist, and, as already stated, cachexia and prostration are prominent in a large number of cases. And what is more, the progress of the symptoms is in most cases extremely rapid, usually not extending over a few months.

We must nevertheless bear in mind that things do not go quite so rapidly in every instance, and instead of this quick progress a more latent form of symptoms of subacute or chronic septicemia may be present. Some patients have even remained sick for some time without presenting any serious disorders, and in one case reported by Féraud the suppuration had existed eighteen months and still the patient was in a fair condition. One thing which is certain is that these purulent collections, when once formed, will never disappear spontaneously, and sooner or later they will either end in death by acute septicemia, which, according to Herman, is the most frequent, or by generalized peritonitis, which may take place in one of the two following manners—viz., by an extension of the inflammation to the surrounding structures, or from rupture of the walls of the cyst if no peritoneal adhesions are present, in which case the pus will be spread throughout the general peritoneal cavity. The same phenomena take place when we are dealing with sterile pus; its consistence, density, and considerable quantity prevent it from being absorbed, and when suddenly emptied into the peritoneal cavity it will disturb the circulation and thus produce a shock which is most favorable for the development of inflammation.

If rupture of the cyst should take place when peritoneal adhesions are already present, the eruption of pus will take place in the neighboring hollow viscera, more particularly in the digestive tract. Serious disturbances, either direct or reflex, may result and death may occur within a few days. But in the majority of cases a prolonged suppuration is set up, which little by little brings the patient into a hectic condition. If the ruptured cyst is a dermoid the hair and solid

matter, more particularly the teeth which have been emptied out along with the liquid contents, may become the cause of a particular series of accidents. For example, in certain cases, if foreign bodies from the cyst which have entered the bladder become the nucleus of a vesical calculus, or else if they become engaged in the ureter, they cannot pass down it and consequently become an obstacle to the flow of the urine. The cystitis produced by a communication between a dermoid cyst and the bladder is always very severe, and the inflammatory process, extending upward to the kidney, will result in very serious renal lesions.

If rupture of the cyst takes place into the vagina or through the abdominal wall, the patient is liable to chronic septicemia. Nevertheless in these cases, as well as in those in which rupture has taken place into the hollow viscera of the neighborhood, a happy outcome may be brought about and the condition may finally be cured after a certain length of time, because the walls of the cyst collapse, become atrophied, and the secretions dry up; but in such a case we have an exception, and, if the surgeon does not wish to see his patient die, interference is the only proper thing.

At the present time the removal of cysts of the ovary, whether they have become infected or not, is the proper course to pursue. As soon as suppuration has been recognized, or even suspected, immediate interference is to be recommended. To wait is to place one's self voluntarily in bad condition and takes away much chance of success. If we operate early the patient is in better general condition to undergo surgical interference, and if adhesions are present they are naturally softer, easier to break down; and consequently an operation under these circumstances is less difficult and of shorter duration, which, as we all know, are some of the chief elements of success.

Operation for the removal of ovarian cysts which are the seat of a septic infection may be divided into four stages, as follows: 1. Incision of the abdomen. 2. The breaking-up of the adhesions and ligature of blood vessels which they may contain, and then the pus may be removed by the trocar, and not with the knife, because if the cyst is incised pus will immediately flow out and the wound will very likely become infected by the septic material. The third step in the operation is the extraction of the cyst through the wound, and in doing this the surgeon should be careful to avoid infecting the abdominal incision at the time he is drawing the pocket through; but this

complication may be easily avoided if aseptic gauze sponges are tightly packed around and inside the line of incision. Next comes the ligature of the pedicle and its section, after which it is dropped into the abdomen; and here again we must remember that the ligature may become infected, and stout catgut is, according to our way of thinking, the proper material to use.

The fourth step of the operation consists, firstly, in the cleansing of the peritoneum, which should be done with great care, especially when the operative field has run any chance of infection. If this has occurred it appears to us that a free irrigation of the peritoneum is proper, but it should be done with care and the liquid employed should be a warm normal salt solution. We should be careful to limit the irrigation to the subumbilical portion of the peritoneal cavity, and a back flow of the liquid toward the diaphragm should be prevented by having the operating table perfectly flat and the thorax slightly raised. The temperature of the fluid should be 37° C. After the cavity has been carefully cleansed the abdominal incision is to be sutured, but we think it more prudent to always drain these cases by placing the tube at the most dependent part of the wound.

The question that arises is, have we any contraindications for operating on ovarian cysts which are the seat of septic infection? If the patient is pregnant we believe that this condition is a decided indication for operating, because both the mother and child are greatly imperilled by the presence of this pathological condition. In the first place, miscarriage may take place, and in a case reported by Féraud the mother and fetus both died.

Labor may also be greatly hindered by the presence of a cyst, or may even be rendered impossible; and even if this takes place without trouble, when the uterus becomes emptied it may produce a change in the relationship of the cyst to the surrounding organs and produce a torsion of the pedicle, or the cyst at the time of delivery may prevent involution from taking place and thus give rise to very serious hemorrhage. We are also of the opinion that pregnancy may cause infection to take place in ovarian cysts as well as cause them to rupture. Consequently, if we wish to prevent the patient from the possible occurrence of these serious accidents, ovariectomy should be performed regardless of pregnancy, and the life of the mother is thus insured, while in many cases pregnancy will go on to term and a healthy child will be delivered.

Davis says: "In cases of pregnancy complicated by ovarian tumor but one treatment is advisable, and that is the removal of the tumor. The best time for such operation is about the fourth month of pregnancy. No period of pregnancy, however, positively forbids ovariectomy, and in all cases removal of the tumor is indicated."

Penrose, Dsirne, Fleischlen, Anderson, Terrillon, McMurtry, Acconci, and Mangiagalli are all in favor of the removal of ovarian cysts during pregnancy, and, lastly, we should cite from the excellent text book on obstetrics by Ribemont-Desaignes and Lepage the following, viz.: "That during pregnancy certain complications, such as peritonitis, torsion of the pedicle, or rupture of a cyst, demand immediate interference," and the writer would add that septic infection of an ovarian cyst complicating pregnancy imperatively demands immediate operation. As to whether ovariectomy should be performed on a woman who presents puerperal septicemia, we think that the puerperium should not be considered as an absolute contraindication for surgical interference, and this proposition is borne out by the case reported by Leroy des Barres, who saved his patient by operation. It is certain that a patient presenting a puerperal septicemia is most excellent soil for the development of bacteria, and consequently if operation can with good reason be delayed it is better to do so; but we are absolutely in favor of operating where the septic symptoms are urgent.

There is one absolute contraindication for the complete removal of cysts, and this is when we find ourselves in the presence of old and tough adhesions binding the tumor to the surrounding parts, and in these cases there is much danger if rupture of these fibrous bands is undertaken. Under these circumstances, both on account of the difficulties in an operation and the necessity of long and laborious work, it has been advised to perform an incomplete extirpation. Keith in one case found the peritoneum hard and cartilaginous and fully one-third of an inch in thickness, and it was so incorporated with the cyst wall that an attempt to separate it was not made. The pus was washed out and the cavity drained. The patient recovered.

We think it advisable in these cases to suture the borders of the incised cyst and then drain the latter, just as we would in cases of abscess. But we also think that in addition to the drainage through the abdomen it is more prudent to incise the vaginal cul-de-sac and obtain the drainage by this route as well. Naturally ovariectomy with complete extirpation of the cyst is

the ideal treatment when it is possible, but in other cases in which danger is incurred from the presence of tough adhesions, the above treatment, we think, is indicated.

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THE EXANTHEMATA AS A FACTOR IN PRODUCING PELVIC DISORDERS.¹

BY

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DIFFERENT writers, in discussing the etiology of metritis and collateral pelvic disorders, have included the exanthemata among the specific causes of these diseases; distinguished pathologists also have called attention to the fact that the exanthemata are likely to, and do, infect the glands and mucosa of the organs of generation, as other portions of the human body; but a careful digest of the literature of gynecology discloses little reference to this potent factor of pelvic trouble.

In these later years the terms "preventive medicine" and "conservative surgery" have become popular phrases with the profession, and in many departments of work they are something more than mere words to juggle with; they have become actual facts. When we have learned how to control the systemic poisoning of scarlet fever and other dangerous exanthemata, especially in their relations to the female pelvic organs, then shall we have accomplished something more in preventive medicine and perhaps paved the way for a more conservative surgery.

The vast number of cases of menstrual disorder and of pelvic disease with which the gynecologist comes in contact in the young and unmarried, even in those of healthy parentage, invite a careful study into every possible predisposing cause which may contribute to these forms of misery. Interest in such cases, and the many years of opportunity afforded in their study and treatment, is the reason offered by the author for submitting this paper.

Pathology has been no less a friend to this than to all other departments of study. There is one general pathological law to be remembered in connection with these cases, viz., that

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there is just as much reason to suppose that the vagina, uterus, and adnexa should be infected with the virus of these exanthemata as that other organs of similar structure should be affected. Why not a vaginitis and septic endometritis as well as a purulent otitis and rhinitis? Why not ovaritis and salpingitis as well as nephritis and adenitis? The histological elements are the same—mucous membranes on a basement membrane and glandular structures rich in capillaries; the situation only is changed, but pathological lesions are not affected by change in the locality of the elements. There is no sound argument why the poison should have a selective affinity for some organs and yet pass by others of the same histological structure—the generative organs.

Keating says: "The morbid anatomy in cases of the exanthemata consists mainly in the changes which take place in the integument, subcutaneous connective tissue, and the *mucous* membranes. The changes which are found in the viscera are due largely to the complications and sequelæ, and these are very likely to be set up or established by heredity." Flint says: "There are none of the eruptive fevers that may not attack the mucous membranes of the body, and at times their virulence seems to expend itself largely in that direction, and while all persons are liable, those of strumous habit are more especially so." Keating (vol. iii., p. 732) says: "Numerous cases of ovarian tumors have been recorded . . . and inflammation of the tubes during exanthemata." Rösch, Rilliet, Cormack, Leo, and others refer to abortions as the result of scarlet fever, small-pox, and measles; they account for this by the shock and also by the hyperemia of the mucous membrane. Ziemssen ascribes it to the poison of the infection, which is conveyed directly through the blood. Weisse refers to an exanthemic hemorrhage from the uterus during measles. Obermaier, speaking of uterine hemorrhage in cases of small-pox, says: "Its punctual appearance is so often observed in connection with the initial stage that it is difficult to regard this as something purely accidental."

These are acknowledgments by eminent authorities that the exanthemata are liable to attack the mucous surfaces of the genito-urinary organs, but they lean to the side of its greater danger in cases of strumous or hereditary conditions. This question of heredity is always one of chief importance, for it is by known tendencies to disease in both the family and the patient that we interpret existing symptoms.

It is the children of a line of healthy ancestors who avoid dangerous complications as a rule. It is the children of strumous, gouty, or tubercular parents who are most likely to be attacked with sequelæ. The frequency with which this is demonstrated makes the idea of special liability irresistible. Nevertheless it does not controvert the theory and the fact, that some healthy people may be affected, and cases may be adduced to demonstrate that the law of selection is not an exclusive one. The ease and safety with which many convalesce from eruptive fevers have lulled the laity, and too often the physician, into the belief that danger is a remote contingency, and intelligent care is withheld until some unusual demonstration arouses those entrusted with the care of the sick.

We can hardly be expected to obviate every complication following a scarlet fever, but the purulent discharges of the nasal and aural passages are successfully handled to day with the antiseptic and more scientific treatment, and the same rational care has without doubt lessened the number of cases of uterine and renal trouble.

An elaborate classification of endometritis, based exclusively upon the results of bacteriologic research, is offered by Winckel, under which he speaks of (Group B) "endometritis from intoxication or infection. In this group are included those following extensive burns, those caused by phosphorus-poisoning, and those following infectious diseases, as cholera, small-pox, or scarlet fever."

Endometritis is one of the most common ailments of young unmarried women. This is frequently accompanied with some flexion. Very many of these cases are due undoubtedly to the environment of the patients, their mode of dress, habits of life, neglect, etc.; but some of them have a deeper origin, and such cases are not amenable to ordinary treatment. The mischief probably antedates the menstrual period, and had created pathological conditions of the uterus and adnexa before their legitimate function had been called into activity; and to this condition we are often indebted to the exanthems. One class of these cases usually yields to the ordinary prescribed care and treatment; the other, never. The one is a functional derangement, the other an organic disease. In one the discomforts are likely to be periodical; in the other the misery is perennial.

The presence of these pathological conditions is certain also to invite increasing and graver manifestations during the

months and years of earlier menstrual life, and may embody almost every phase of pelvic ailment found, from a dysmenorrhea to an ovarian cyst, pus tubes, or even an ectopic gestation. The reason so few of these local complications are discovered at the time of infection is because they have been least taught in connection with eruptive fevers. Mothers seldom notice them; if they do, they consider the matter irrelevant and fail to call attention of the physician to it. Moreover, the function of the gynecologist is considered to be to learn just what special pathological conditions exist and to overcome them, rather than to make critical investigation as to the pediatrics of the case.

Small-pox and measles undoubtedly make a very noticeable impression on the generative organs of the female at times, and this is believed to be in increased ratio to the age of the patient. The permanency of such trouble is, nevertheless, not enduring, and, however dangerous at the moment, it fades with convalescence, rarely developing later into conditions requiring operative procedure, although this may occur.

Scarlet fever, on the contrary, attracts less attention to the generative organs in its early stages, as a rule; but its subtle poison may engender dangerous and permanently diseased conditions, as it too often does in renal, nasal, and aural complications. Moreover, it is perfectly safe to say that scarlet fever is more frequently a factor in the production of pelvic disorders than all other of the exanthemata combined.

It is certainly an interesting question whether these chronic catarrhal inflammations of the endometrium and Fallopian tubes in the young, at first and for a varying period of time assuming a sort of passive condition, are not responsible later for uterine flexions caused by a thickening of the anterior or posterior walls, or to tubal displacement and adhesions, or to defective or partially obliterated tubes which may entrap the ovum.

In the process of obtaining histories of gynecological patients, I have for many years had my attention attracted to the fact that some of my cases were intimately associated with a history of scarlet fever. One case in particular, and which is reported herein, was so obviously a sequence of scarlet fever as to impress me strongly with the belief that this disease might be more often an etiological factor in pelvic disease than was usually understood, and this led me to the more careful study in obtaining histories to see if possible cause and effect could be established.

There is, of course, a large proportion of cases of pelvic trouble in which no relation can be established with any exanthemic cause, but that are due to extraneous causes, such as injuries, colds at menstrual period, postpartum neglect, etc. This paper refers only to cases where pelvic disease developed prior to marriage and had exanthemic origin. The histories of a few cases having special interest in this direction are appended.

CASE I.—Miss D., age 19, single, always delicate; remote tubercular disease in family history; had scarlet fever at 9 years of age. Her mother states that she had at that time a moderate flow from the vagina, accompanied with abdominal distress lasting two or three days, and which she thought to be the beginning of menstruation; that this was followed with some leucorrhea for quite a while, and later still, after full recovery from the scarlet fever, at different times she noticed a yellow discharge which soiled her clothing. She suffered much with headaches and loss of appetite intermittingly for years. Menstruated first at 15 years of age; always irregular and accompanied with dysmenorrhea and nausea. Saw her first in September, 1884. Diagnosis, septic endometritis and prolapsed left ovary with probable tubal disease. She had suffered so long that she accepted cheerfully the proposed operation as affording the only hope of relief.

Oöphorectomy performed October 12, 1884. Both ovaries were found to be cystic; the left was prolapsed and adherent; pyosalpinx of left tube. Recovery was prompt. The endometritis was treated later with hot intrauterine irrigations and applications of compound iodine paste with satisfactory results.

In 1885 I read a paper before the Brooklyn Pathological Society on the subject of "Tait's Operation." I quote partially from one of the cases reported there, to show that at that time I strongly believed in the possibility of pelvic trouble arising from scarlatinal infection.

CASE II. "*Pyosalpinx*.—E. H., 23 years of age, single, very delicate, and of nervous temperament. Had suffered almost from her first menstrual period, which began at an unusually early age. Two or three years prior to this she had a severe attack of scarlet fever, followed by scarlatinal nephritis and dropsy. At this time some of the pelvic pains seemed to have originated, which later on, as menstruation developed, became the more acute and fixed pains of her present disease.

“I may say here, parenthetically, that, if scarlet fever can invade one portion of the genito-urinary apparatus, I think it fair to assume that other portions may also be affected, and I see no reason why the ovaries and Fallopian tubes should be exempt.

“In this case menstruation was irregular—generally at intervals of about three weeks—and rarely lasted less than ten days. Examination indicated ovarian and tubal disease.

“Operation March 3, 1885. This was accomplished rapidly. Some evidences of chronic pelvic peritonitis, deep-seated, but not sufficient to delay materially the operation. Both ovaries enlarged, intensely engorged, and full of small cysts. These were removed, together with the tubes, as close to the uterus as it was possible. Recovery from the effect of the operation was exceedingly prompt. The wound healed by the first intention, the temperature or pulse never rising above 100.”

CASE III.—Mrs. G., age 35 years, married, sterile, was always healthy and robust till 17 years of age, when she had an attack of intermittent fever (?) of great severity, the effects of which lasted two or three years. Following this she began to suffer with dysmenorrhea, which every year increased in intensity, and which later on was complicated with evident attacks of localized peritonitis, both pelvic and abdominal. There was some constriction of the vagina, and small bands of adhesion ran between the cervix and upper vaginal walls on either side. Coitus was intolerable; and the most careful digital examination produced nausea and fainting, compelling her to keep her bed for that day. As far as it was possible to learn from an examination, there was great tenderness of the left ovary; the right ovary was undetected, but a large and fluctuating mass filled up that region of the pelvis, which was supposed to be a cyst of the ovary. There was much less mobility of the uterus than usual. Tait's operation advised and performed at Long Island College Hospital, January 22, 1884. The result was unfortunate; the patient died in thirty hours. There was total suppression of urine after the operation. The autopsy demonstrated fatty degeneration of the kidneys. The wound and abdomen were satisfactory.

Intimate acquaintance with relatives and friends of Mrs. G. made it possible for me to obtain later a more accurate history of her early life. She had scarlet fever at 13 years of age, followed by scarlatinal nephritis; from this she was supposed to have fully recovered. She menstruated first at 15 years of age,

with about the same discomforts usual with young girls, perhaps rather more of headache.

The evidences of chronic nephritis and localized peritonitis from pus tubes which were disclosed by the autopsy indicate almost certainly that scarlatinal poison invaded not only the kidneys but the entire pelvic viscera. The intermittent fever, so called by her, could hardly have been such. There was no regular periodicity in the attacks; quinine had no controlling effect. The attacks spread over a much too prolonged period—three years. No malaria existed in her immediate locality. No other member of the family was afflicted with it.

CASE IV.—Mrs. L. C., age 18 years; both parents robust and healthy. Had scarlet fever at 7 years of age, followed by otitis chronica; also had some vaginal discharge which attracted attention of her mother. Never seemed to be well and strong as the other children in the family after her attack. Menstruated at 13 years, always regularly, but with so much pain as to compel her to remain in bed for two or three days. In the last two years has had three attacks of localized peritonitis. Recently married; coitus intolerable. Examination revealed chronic pelvic inflammation with fixed uterus; pus collection on right side. Oöphorectomy; cure.

CASE V. *Menstruation permanently arrested by Measles.*—Mrs. B., age 29; personal and family history good. Had measles severely; constitutional effects more than usually prolonged; metrorrhagia lasting one month; never menstruated afterward. Had prolonged uterine catarrh, which later yielded to local treatment. She had the reflex conditions usual at the menopause rather intensified. While disease of the tube may have existed in this case, it could not be satisfactorily demonstrated.

CASE VI.—Hattie G., age 6; healthy parents. Had scarlet fever at 3 years of age; still suffers from nasal catarrh and partial deafness from otitis. Mother stated that her child had for a long time more moisture about the vulva than usual in little girls; had consulted no physician about it, but used frequent bathing. Later, as the child grew to care for itself, its condition was overlooked by the mother, and she only learned by accident of the child's difficulty in urinating. A chronic vaginitis and vulvitis had existed, the labia minora becoming united by the inflammatory process so completely that, as the child sat down to urinate, the stream of urine was forced upward at an angle of 45°. Operation: division of the labia and

temporary local treatment. Apparent cure, but I shall endeavor to keep this case under surveillance, to see if any further trouble eventuates from this source.

CASE VII.—Mrs. R., age 18; healthy parents. Had scarlet fever at about 10 years of age; had bloody discharge from vagina lasting two days at that time, followed later by some leucorrheal discharge. Since menstruation was established the ostium vaginæ has always been sensitive. Was recently married. Her vaginismus made sexual connection impossible. Operation, under an anesthetic: dilatation of uterine canal; curettage and application of compound iodine paste to the endometrium. Recommended small cocaine tampons inserted within vulva before retiring. She fortunately became pregnant soon after, and in time her vaginismus disappeared.

I have been able to obtain reports of four cases of vaginismus which have occurred in the practice of other medical gentlemen; in three of these there was a positive history of scarlet fever in childhood, the other was uncertain. These four or five cases form a very indefinite basis for determining the etiology of vaginismus; but taken in connection with the statements of eminent pathologists before quoted regarding the effects of scarlet fever on the mucous membranes of the genital tract, it does not seem to be an unreasonable deduction that the local pathological results of scarlet fever may irritate the sacral plexus and the pudic nerves to the extent of producing a neurosis involving the entire genital tract, although exhibiting its greatest intensity at the ostium vaginæ.

CASE VIII.—Miss L., age 20; healthy parentage. Had scarlet fever at 7 years of age. Her mother noticed later that she had a more or less constant vaginal discharge; at times this was accompanied with a bad odor. For four or five years the patient had suffered from occasional headache, pain in the back and legs. This was diagnosed to indicate an approaching menstruation. Tonics and emmenagogues were used without effect. She became pale and anemic. Her abdomen enlarged, and this was pronounced by her physician to be a tumor. I saw the case October, 1891. Diagnosis: retained menstruation from imperforate hymen. Operation for drawing off the fluid was successful.

This patient was subject for years after her attack of scarlet fever to some vaginal discharge, which was undoubtedly produced by scarlatinal vaginitis. This probably produced thickened walls and sealed up the edges of the hymen, causing the

retention. Subsequently the hymen was excised, and with some local and general treatment entirely satisfactory results were obtained.

CASE IX.—Miss R., age 24; single; both parents robust. This young lady lives in a Western State and is a graduate of a prominent university. She has never menstruated. She is one of a large family of children, all of whom are healthy, and she is herself the picture of good health; but she suffers more or less from cephalalgia, always intensified once a month and lasting about three days—a monthly neurosis probably corresponding to what would be a menstruation. She had measles at 10 years of age. Her mother, who is an unusually intelligent lady, tells me she had for a long period after that some muco-purulent discharge from the vagina and complained of backache. These troubles seemed to wear away with time, but the headaches gradually took their place, and nothing has as yet succeeded either in producing a menstrual flow or relieving the headaches. The uterus is about normal; if anything it is slightly deficient in size, being two and a quarter inches in depth. No indication of disease or deformity elsewhere in the pelvis. She has consulted three prominent specialists, and as her general health is so good they have counselled non-interference.

These are by no means all the cases that have come under my care where the exanthemata have seemed to influence the conditions found, but they are enough, perhaps, to demonstrate this thesis. It may not be possible to prove that the multitude of local ailments in young unmarried ladies bear any definite relation to the eruptive diseases of childhood from which they may have suffered; nevertheless it cannot be doubted that many cases can be positively assigned to these causes, and who is able to say how large a proportion?

215 SCHERMERHORN STREET.

SOME OF THE COMPLICATIONS FOLLOWING VAGINAL
HYSTERO-SALPINGO-OÖPHORECTOMY IN PELVIC SUPPURATION;
WITH REMARKS ON THE OBJECTIONS TO THIS OPERATION.¹

BY

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THREE years have passed by since Dr. X. O. Werder introduced to this Association the subject of vaginal hysterectomy in suppurative pelvic disease. His excellent paper was supplemented in an able and forceful manner by Dr. B. Sherwood Dunn, who, then just returning from France, gave his experience with this operation obtained in the clinics of Péan, Ségond, Richelot, Pozzi, and others. Our transactions show that this then comparatively new method of dealing with pelvic suppuration was not favorably accepted. Most of the speakers seemed to be fully satisfied with the suprapubic operation, and expressed the belief that there is a field for the vaginal procedure, but that this field is extremely limited.

A perusal of the literature of the past few years proves that vaginal hysterectomy has made its way here and abroad. Its condemnation upon theoretical grounds has decidedly diminished. Its advantages are too plain to permit of being longer ignored. Men who in the beginning strongly opposed this "mutilating operation," as some are fond of styling it, have changed their opinions. Guided by the experience of others, they have adopted this method and confirmed the assertions of its advocates that it is a conservative operation in the broadest sense of the word, a procedure which, though sacrificing the uterus, conserves the life of the patient even under circumstances where the suprapubic route would mean certain death.

The propriety of removing the uterus in suppurative disease of the appendages has been questioned ever since Péan intro-

¹ Read before the American Association of Obstetricians and Gynecologists, at Pittsburg, Pa., September 20-22, 1898.

duced vaginal hysterectomy. Briefly stated, the chief objections are :

1. The uterus is not a useless organ after the ablation of the appendages and should not be sacrificed unless seriously diseased.

2. Vaginal hysterectomy is an incomplete procedure, followed by serious complications, and is not curative.

The discussion of the justifiability of removing the not seriously diseased uterus antedates the introduction of vaginal hysterectomy for pelvic suppuration. Commencing in 1876, when Porro introduced the operation bearing his name, the battle *pro* and *con* has been kept before the profession until the present day, has at times been quite animated, and has not always been conducted within the limits of parliamentary courtesy. It is only within the past few years that the Porro, or rather the modified Porro operation, has come more into favor, and it is to be hoped that in the near future its indications may be extended to that unfortunate class of pregnant women whose pelves render delivery through the vagina impossible. This position, at present assumed only by a small number of progressive men, is certainly in accordance with the spirit of science and humanity.

New life was brought into these discussions by Schröder in recommending the supravaginal amputation of the cervix for cancer of the cervix uteri. The argument of Schröder and his followers, that it is unnecessary to sacrifice the entire uterus when the disease is limited to the cervix, was regarded as inconclusive. Strange to say, men objected to this conservative plan of treatment who at the same time condemned the Porro operation as too radical a procedure. Notwithstanding the fact that the statistics of the supravaginal amputation of the cervix as published in 1886 by Hofmeier,¹ then Schröder's first assistant, compare well with those of hysterectomy, the former operation fell into desuetude and to-day is only a matter of historic interest.

A strong wave of conservative surgery has struck the profession. Beginning to rise a few years ago, it has reached such proportions that even the most ardent advocate of radical measures can neither deny nor ignore its presence. Although it appears that the limits have long since been transgressed, it is impossible at the present day to say how far the principle of conservatism will be carried. In this era of conservative sur-

¹ Zeitschrift für Geburtshülfe und Gynäkologie, vol. xiii., p. 360.

gery it is refreshing and inspiring to meet with an article whose author, fearless of criticism, steps beyond the trodden path and resorts to and advocates a radical procedure in order to save life. I refer to the article of an illustrious Fellow of this Association, Dr. Rufus B. Hall,¹ published last January. This writer recommends hysterectomy as a preliminary step in all cases of intraligamentous cysts where the tumor is firmly adherent to the pelvic floor and cannot be easily detached. By cutting off the blood supply before enucleating the tumor the danger of hemorrhage is removed. This method of dealing with a certain class of intraligamentous cysts no doubt is a valuable improvement of our technique and should as such be appreciated; yet I venture to say that, like vaginal hysterectomy in pus cases, it will meet with the objections of those who insist on the application of the surgical rule not to sacrifice an organ which is not seriously diseased.

The disposition to preserve the uterus during the childbearing age in women with healthy tubes and ovaries, or in unilateral suppurative pelvic disease, can well be understood; but why this organ should not be removed as the initial step of a life-saving operation when the ablation of both appendages becomes a necessity, is beyond comprehension. The assertion that the uterus without the appendages is still an important organ, that its functions have not ceased with the artificial induction of the menopause, must be rejected as untenable in the light of our present knowledge. The arguments that after the extirpation of the uterus the nervous phenomena are more pronounced than when the appendages alone are removed, that the sexual appetite is lost and the sexual relations are disturbed, have strongly influenced many surgeons against vaginal hysterectomy. Careful investigations, however, have shown that these arguments cannot be verified. Mainzer,² in his report of two hundred vaginal hysterectomies for chronic inflammation of the adnexa performed in Landau's clinic, arrives at the conclusion that there is less disturbance of the nervous system after the radical operation than after salpingo-oophorectomy alone. He further states that the age of the patient bears no relation to the presence or absence of these nervous symptoms. This difference of opinion can probably be explained by the difference in the nervous system of the patients. From my own experience I cannot confirm the view

¹ American Gynecological and Obstetrical Journal, 1898.

² AMERICAN JOURNAL OF OBSTETRICS, vol. xxxvii., p. 693.

that the removal of the uterus increases the nervous disturbances incidental to the menopause, and I am inclined to believe that this view is based upon the complaints of neurotic women.

With reference to the sexual passion, my patients, with but one exception, state that they have as much sexual appetite now as at any time before operation. Two of them, young widows, who married a year after the operation, informed me repeatedly that they are more passionate and enjoy sexual intercourse more than ever.

It is universally admitted that the mortality of vaginal hysterectomy is considerably less than that of the abdominal operation. On this most important point all are agreed, and every surgeon whose first object in operating is the saving of life must feel kindly toward this operation. There is diversity of opinion, however, as to the ultimate results of the vaginal procedure. Notwithstanding the favorable reports coming from all sides, some operators persistently claim that vaginal hysterectomy is followed by serious sequelæ and does not cure the patient.

Before discussing this question I may be permitted to say that I am totally opposed to vaginal hysterectomy in those cases in which there is a possibility of saving one tube and ovary—*i.e.*, in cases of unilateral suppuration, even when due to gonorrhea. I am not as yet convinced that both appendages must be sacrificed—far less the uterus—when the gonorrheal infection is limited to one tube and ovary. I know that gonococci have been found in the uterus while the pus in the tubes and ovaries contained no bacteria. Broese¹ quite recently reported such a case. The gonococci in the tubes and in an ovarian abscess had perished, while they were still present and virulent in the uterus and in the urethra. Experience teaches that in a number of these patients, after the removal of one of the adnexa, the gonococci invade the other side, requiring a secondary operation; but many of them remain well, and this is probably due to curettement and other appropriate treatment of the uterus and vagina. The source of the second infection after such treatment is by no means clear. It may be that we did not succeed in destroying the gonococci in the uterine cavity, but the possibility remains that such patient has become the victim of a new infection—that she has contracted gonorrhea the second time. As the risk

¹ Zeitschrift für Geburtshülfe und Gynäkologie, vol. xxxviii., p. 539.

of a secondary operation, if done per vaginam, is but slight, the conservative plan of treatment—the removal of the diseased tube and ovary by means of an abdominal section—is certainly preferable, especially in young women.

My personal experience with vaginal hysterectomy for pelvic suppuration is limited to 42 cases operated upon during the years 1895 to September, 1898. This series, though small in number, will be found quite interesting on account of the extent and the gravity of the pathological changes. Of the 42 patients, 18 belonged to that desperate class of cases which, if treated by the abdominal route, are either left unfinished or, according to the statements of prominent operators, have a death rate of 25 to 30 per cent, not in the hands of beginners, but in those of the most skilful surgeons. The pelvic organs were agglutinated into one mass and could not be distinguished by vaginal or rectal examination. In some instances these masses reached half-way to the umbilicus, while in others the peritoneal cavity was less involved and they extended downward into the vagina, pushing the uterus against the symphysis pubis and compressing the rectum to such an extent that an ordinary rectal tube could not be passed without difficulty. The lesions of the remaining 24 patients were not quite so extensive, yet in every instance both appendages were so far involved that a conservative operation seemed to be out of the question.

The vast majority of the patients belonged to that class of women who have to work to earn a living. With but few exceptions they had passed through many attacks of pelvic peritonitis and were invalids for years. A number of them had come from the medical ward, where they had been sent as typhoid fever and appendicitis cases. About half a dozen were prostitutes. Three stated that they had discharged pus by the rectum several years ago; 4 had previously been treated by vaginal incision and drainage—2 by different surgeons, 2 by myself. Complications occurred in the following 3 cases:

CASE I.—Mrs. H. S., age 28 years; married; mother of five children. Pelvic peritonitis due to gonorrheal infection. Pelvis filled with masses. Vaginal hysterecto-salpingo-oöphorectomy October 2, 1895; multiple clamp method. The patient made a prompt and uncomplicated recovery and was permitted to leave the bed on the twelfth day after operation. Two days later she complained of sore throat, and on the morning of the following day of stiffness of the neck and difficulty of deglutition.

As the day progressed these symptoms increased in severity, and with the appearance of trismus and opisthotonos it became evident that the patient was suffering from tetanus. The first convulsive attacks occurred late in the afternoon and confirmed the diagnosis. The patient died October 19, seventeen days after operation. Temperature at death 108.6°.

At the time when this sad accident occurred I was at a loss to explain to my satisfaction the source of the infection. I believed that the bacilli had entered the system through slight abrasions at the vaginal opening, due to pressure of the clamps. As soon as the diagnosis was established these abrasions, which were almost healed and did not look suspicious, were thoroughly disinfected with a concentrated bichloride solution. Immediately after the death of the patient I excised some of this excoriated tissue, and tetanus bacilli were found in great abundance. While the presence of the bacilli in the vagina was thus demonstrated, their origin could not be traced.

It is my rule to remove the gauze, which at the operation is introduced into the abdominal cavity to cover the clamps and to prevent injury to the bowel, on the fourth day. The cavity is then flushed with a sterilized creolin solution and a piece of iodoform gauze reintroduced. This dressing is changed daily until the eighth day, when I leave the gauze out. A vaginal creolin douche, made with filtered water, is then given by the nurse once a day until the patient is discharged.

Although we never succeeded in finding tetanus bacilli in the filtered water, which was examined at various times, I looked upon it, in the absence of other evidence, as the probable carrier of the infection. This view is supported by the investigations of F. B. Hancock and J. C. Hirst,¹ who in 1897 reported five cases of puerperal tetanus. In three of these cases the infection is attributed to intrauterine douches made with unsterilized water which was shown to be contaminated by tetanus bacilli. The only case of tetanus following vaginal hysterectomy which I have found in literature occurred in Landau's clinic and is published by Mainzer.² The patient died on the ninth day post operationem; the source of the infection could not be ascertained.

CASE II.—Mrs. A. S., age 38 years; mother of two children; invalid for years. Masses on both sides of the uterus, which was large, retroverted, and adherent to bowel and omentum.

¹ University Medical Magazine, vol. ix., p. 750.

² Archiv. für Gynäkologie, vol. liv., p. 464.

Vaginal hysterо-salpingo-oöphorectomy October 4, 1897. Patient did well the first two days after operation. There was but little vomiting after the ether. On the third day the pulse rate increased to 140. She had severe cramps, was nauseated, and again began to vomit. The abdomen was slightly tympanitic, peristalsis increased. Attempts to move the bowels by cathartics and enemata were not successful; only very little gas was expelled by the rectum. The following day she seemed more comfortable; vomiting had ceased and she was able to retain nourishment. Her general condition, however, did not improve. The abdomen became more distended, and though the pulse rate went down to 120 it looked like a case of intestinal obstruction. Examination per vaginam was negative; the bowel was not adherent to the vaginal incision. Large doses of Epsom salt and a number of enemata produced one slight and two copious bowel movements in the afternoon of the fifth day. The pulse rate came down to 104, while the temperature remained around 98°. The patient, though weak, was in good spirits, and celiotomy, for which preparations had been made, was postponed. The following morning she was profoundly collapsed, and died at 2 o'clock P.M., six days after operation. Autopsy showed that two coils of the ileum, about four inches above the ileo-cecal valve, had become adherent, forming a loop and producing a flexure of the intestine. Neither bowel nor omentum was adherent to the vaginal incision.

This case demonstrates the difficulty of an early definite diagnosis of intestinal obstruction. It is worthy of record that fecal vomiting did not occur in this case. The obstruction was not complete, at least not on the fifth day when three bowel movements were obtained. This action of the bowels was the deceptive feature which led me to delay surgical interference. As records show, ileus following vaginal hysterectomy is fortunately a rather rare complication.

CASE III.—Mrs. F. R., age 38 years; married; mother of one child; two abortions. Patient was received from the medical ward October 12, 1897, with a temperature of 104°. It was a desperate case of gonorrheal infection, with the pelvic organs agglutinated into one mass, illustrating the seriousness of delay after palliative treatment has been found inadequate to effect a cure. Vaginal hysterо-salpingo-oöphorectomy October 19, 1897. The operation was very difficult. The patient reacted well under the use of stimulants, but remained weak and made a slow recovery the first ten days. From November

1, the twelfth day after operation, she improved rapidly until November 17, when, preparing to leave the hospital, she complained of weakness and took to her bed again. On the following day her temperature began to rise and remained high until November 29, ranging between 101° and 103° . From this day on recovery was uninterrupted.

The cause of the fever could not be determined. At first I thought that too early closure of the vaginal incision had interfered with drainage and that retained septic material was responsible for the elevation of temperature. Repeated vaginal examinations, however, showed the pelvis to be in good condition. The abdomen was soft and not distended, and the bowels responded promptly to cathartics. Examination of the heart, lungs, and kidneys gave negative results. The vaginal creolin douches which had been given this patient were made with distilled water.

Several months later I observed the same symptoms in a patient upon whom I had performed plastic operations. She had been perfectly well until the third week after operation, when her temperature began to rise. This led to further investigations, which showed that the distilled water used in the preparation of the creolin douches contained two varieties of staphylococci—the staphylococcus aureus and albus. The same organisms were found to be present in the air around the tank from which the distilled water was drawn. As Mrs. R. made the impression of a septic patient, I believe her condition to be due to staphylococcus infection, and I regard the distilled water as the infecting medium.

I do not want you to think that the distilled water was handled in a careless manner. When douches are prepared it is drawn from a large tank, which by means of pipes is connected with the distilling apparatus. This tank is sterilized before every operation by boiling in it several gallons of the distilled water, which is then permitted to flow out and is not used. The faucet is cleansed with ten per cent carbolyzed water and sterilized gauze wrapped around it. The fact that the samples which were shown to contain the staphylococci were drawn directly from the tank into sterilized flasks makes it evident that infection took place within the faucet.

I have reported this case at length to direct your attention to a source of infection which, springing from the water used in the post-operative treatment, is rather occult and easily overlooked.

With the exception of these three cases I have not met with any complications. The absence of the serious post-operative sequelæ which follow the abdominal procedure in similar conditions is the most striking feature in the subsequent history of the cases and a great comfort to both the patient and the operator. I have followed up my patients and have thus been able to examine most of them. In every instance the pelvis was found to be in a satisfactory condition. No complaints worthy of note were made. These women are practically well, able to work and to enjoy life.

In conclusion I desire to express my thanks to Dr. R. G. Burns, bacteriologist to the Bureau of Health of Allegheny, and Dr. J. Wolf, bacteriologist to the Allegheny General Hospital, for the numerous bacteriological examinations made in the reported cases.

524 PENN AVENUE.

SOME POINTS IN THE TECHNIQUE OF THE ALEXANDER OPERATION.¹

BY

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IN a recent paper read before the New York State Association and published in the June number of the *Annals of Gynecology and Pediatrics*, I claimed that the Alexander operation, when properly performed in suitable cases, was an ideal surgical procedure. I maintained that the ligaments could always be found, and that the operation could be successfully accomplished if care were exercised in cutting down upon the external oblique muscle and thoroughly exposing the ring, and catching up the fibres of the round ligaments at their origin from the spine of the pubes and pillars of the ring; that the canal should not be opened as a routine practice, and only under the rarest conditions, when, for instance, the ligaments were torn in the process of traction, or where the ligaments did not peel out nicely from their fascial and peritoneal coverings, or where the ligaments took an abnormal anatomical course, which might happen, although I have never been confronted with that difficulty.

A steadily increasing experience with the Alexander opera-

¹ Read before the American Association of Obstetricians and Gynecologists, at Pittsburg, Pa., September 20-22, 1898.

tion has impressed me with these facts and at the same time has multiplied my confidence in the useful place it fills in surgery. However, certain precautions must be carefully taken to get these good results, and a few failures have taught me how to avoid disappointments. After the ring has been thoroughly exposed, and the ligament has been definitely grasped by a hook or hemostatic forceps, and traction is being applied to further expose its fleshy belly, care must be exercised to free the now exposed ligament from its tendinous connections to the ring, or the traction force will be divided and will tend to split and weaken the ligament. I have seen men use a great deal of force in drawing the ligaments out, and break them, because this precaution of thoroughly freeing the exposed end was not heeded. Pus, which seems to be such a frequent association of this operation, should be avoided, and suppuration should not occur any more than in similar conditions, such as the radical cure for hernia. After the ligament has been pulled out sufficiently and its attached pubic end has been divided, all bleeding and oozing should be stopped, so that the spaces and little crevices made by the manipulations can quickly close up and not be distended with fluids, as I am sure these spaces, when filled up with stagnant blood, further suppuration, and particularly when no drainage is provided for. Occasionally I put a few strands of silkworm gut well into the bottom of the wound, but this is quite unnecessary if the wound is made dry and all oozing stopped before closing it. Care must be exercised in bringing the edges of the ring together, or the canal when laid open, so as to not unduly constrict the tissues, which are poor in vitality and blood supply. If too much tension is placed on the knot the tissue in the bite is apt to necrose or it is rendered less resistant to suppurative agencies. I use catgut in all my work, and have it chromicized when used to sew the canal or ring together.

In approximating the pillars of the ring I endeavor to catch up the cellular tissue of the floor of the canal with the suture, in order to bring all the parts in as perfect apposition as possible and thus avoid leaving these so-called dead spaces.

Sometimes it is very difficult and almost impossible to shell the ligament out of its peritoneal coverings, so dense is the union between the structures—the result, no doubt, of the previous general inflammation of the uterus and its appendages in which the round ligaments took part. These are the cases in which the ligament occasionally breaks, and are the ones which

often complain for months after the operation has been performed. At the first examination the uterus was found to be fairly movable, there was no evident tubal and ovarian mischief, and consequently we were persuaded to operate: but the promised relief did not follow. However, the Alexander operation was not to blame, but our inability to make out slight latent and quiescent tubal and ovarian disease. No special harm has been done to the woman, a faultily-placed uterus has been corrected, and, if a section becomes necessary to give further relief, it was indicated before the Alexander operation was performed, because the cardinal rule for a successful Alexander is a freely movable uterus with healthy tubes and ovaries.

It has been said that women object to a second operation, but in answer I may say that I never found one woman who blamed me when I placed before her the possibilities of failure. They are more willing to submit to the simple operation with a chance of relief than to a laparotomy which can be done later if found necessary. In these cases I have sometimes opened the canal so as to more easily separate and draw out the ligaments. However, the cases are few where our knowledge does not enable us to make a complete and safe diagnosis, and our failures, therefore, are likewise correspondingly less frequent, and they will continue to become less frequent the more we are capable of remedying our defective technique.

At one time I advocated that a pessary, even for temporary support, was quite unnecessary after an Alexander operation had been properly performed; but this practice I have modified somewhat by placing a well-fitting pessary at the time of operation and having the patient wear it for a few months. The weight of a heavy uterus on a thin ligament is often very great, and in time, I am quite satisfied, may stretch it out considerably.

Although my failures have been few, still three have occurred, and these during the first three months after operation, when no doubt the adhesive tissue was delicate, elastic, and distensible. However, even in these cases the uterus was easily maintained in place by the same pessary which failed to keep it there previous to the operation. I curette the uterus in all cases, and I throw the organ well forward so that its body can be felt through the abdominal wall, and hold it there by a pessary or tampon. The operation is not a difficult one to perform, is without danger, and brings with it comfort to the patient and satisfaction and reward to the surgeon.

SOME CLINICAL OBSERVATIONS BASED UPON ONE HUNDRED
AND SIXTEEN ABDOMINAL SECTIONS FOR
OVARIAN TUMORS.¹

BY

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THE series of 116 cases which I am about to report is strictly limited to neoplasms of the ovary, and does not include any operations performed for inflammatory conditions of ovaries and tubes. It represents my entire experience with this class of tumors removed by celiotomy in my service at Mercy Hospital of this city. Ovariectomies performed at other institutions and in private houses have been omitted for the reason that their records are incomplete and fragmentary and would prove of no value in this connection. I make no claims for completeness in a statistical sense, nor is it intended to give a careful analysis, anatomical or clinical, of all the conditions and complications noted, as such a course would not only consume too much of your valuable time, but it would lead to an unnecessary discussion of points quite familiar to you and of daily experience to the abdominal surgeon. The purpose of this paper, therefore, is, as stated in the title, the consideration of some clinical observations of more than ordinary interest, together with a review of some of the rarer complications noted in the treatment of these cases.

The technique of ovariectomy has reached such a degree of perfection that it allows of very little improvement. It varies, therefore, very little in the hands of different operators. The only points of importance on which difference of opinion still exists at the present time are the necessity of irrigation and drainage. It will be noticed in looking over the tables that in the beginning of my work a large majority of my cases were flushed and drained; that the cases thus treated became gradually less, until in the last two or three years irrigation and drainage have been almost entirely abandoned. In fact, irri-

¹ Read before the American Association of Obstetricians and Gynecologists, at Pittsburg, Pa., September 20-22, 1898.

gation is now never used in my abdominal cases, with the exception, perhaps, of ectopic cases where the abdomen is filled with blood, which can be better and more rapidly removed by a stream of hot water than by any other means; at the same time it serves the purpose of a valuable stimulant, and if left in the abdominal cavity it counteracts the shock and anemia so generally accompanying this condition. The glass drainage has been discarded long ago. Drainage is limited to those cases in which it has either been impossible to arrest all oozing in the abdominal or pelvic cavity, or where large raw surfaces have been left which cannot be covered up or shut off from the peritoneal cavity. These are the only indications for drainage, in my mind, if we exclude abscesses in the peritoneal cavity in which a clean and thorough enucleation of the sac cannot be made, such as some of the cases of appendicitis. These indications, in my experience, are best met by gauze packing, preferably conducted into the lumen of the vagina, so that it will not interfere with complete closure of the abdominal wound. Even in pus cases the abdominal cavity can be so completely and carefully packed off and protected that contamination need not be feared; and when, after the enucleation of pus tubes, a bleeding and ragged uterus is left, it is better practice to remove that organ, so as to secure a dry, healthy pelvic cavity, than to remove the blood collecting in the pelvis by drainage. The Trendelenburg posture has been a great boon to the abdominal surgeon, not because it makes his work easier, but because he can do it more carefully and thoroughly, and, above all, because it permits careful hemostasis. Since discarding abdominal drainage, deep sinuses and fistulæ have become practically unknown, and our results have become better and more satisfactory in every respect. The gauze drainage of which I speak has become necessary only, with few exceptions, in cancerous tumors of the ovary in which the free and persistent pelvic oozing could not be controlled in any other way. That iodoform gauze, used freely in this manner, especially in old, enfeebled subjects, is not entirely devoid of danger was shown in two cases, both operated for malignant neoplasms of both ovaries, which suffered from quite severe iodoform-poisoning, from which they, however, recovered. To another danger, the formation of yellow oxide of mercury in the system when calomel is administered internally in the presence of extensive iodoform dressings, my assistant, Dr. F. F. Simpson, has recently called attention.

The series of cases reported may be briefly classified as follows:

Ovarian cystomas (oöphoritic and paroöphoritic).....	74
Parovarian cysts (5 of them intraligamentary).....	12
Dermoid cysts (bilateral, 1).....	10
Fibroid of ovary	1
Sarcoma of ovary.	5
Cancerous tumors.....	13
Suppurative dermoid.....	1
" oöphoritic cyst.....	1
Torsion of the pedicle.....	12
Rupture of cyst.....	6
Ovarian cysts with tubercular salpingitis.....	2
" cysts complicated by appendicitis.....	4

There have been nine deaths in the whole series, or 7.8 per cent, three of which followed ovariectomy for malignant tumors. Two of these proved fatal a little over an hour after the patients had been returned to bed. Both were far advanced cases, greatly reduced by suffering, the abdomen enormously distended by the tumor and the accompanying ascites, and both legs were markedly edematous. Both were made fully aware of the desperate chances of an operation, should an exploratory incision demonstrate the feasibility of such, but they were anxious to get relief at the cost of life itself. The one patient, 64 years old, had a solid sarcoma of the ovary reaching above the umbilicus, which on superficial examination seemed operable, but the enucleation was accompanied with almost insuperable difficulties. Not only were the adhesions in the pelvis universal and unyielding, but the tumor proved to have a retroperitoneal development growing between the layers of the mesentery and embracing the right common iliac artery, vein, and ureter, which passed through the substance of the tumor and had become infiltrated, so that they were torn across when the tumor was delivered. Though all bleeding points were promptly and permanently secured, the patient sank rapidly after the completion of the operation, in spite of free stimulation and infusion with normal salt solution. Had it been possible to foresee the difficulties of this operation, it would, of course, not have been undertaken.

In the second case the malignant cystoma, which filled up the whole abdominal cavity and was universally adherent even to the posterior surface of the liver and the stomach, was complicated by mitral regurgitation. Though the operation was not unduly prolonged and the loss of blood was not unusual, she

never rallied from the shock. In both these cases the disease was bilateral, as it was also in the third, who, though the operation was unusually difficult and somewhat tedious, did fairly well until the fifth day, when she died with symptoms of collapse and heart failure. No autopsy.

Two deaths resulted from suppurating cysts, dermoid and oöphoritic respectively, in which the cyst walls were necrotic, almost gangrenous, the tumor falling to pieces in the delivery, pouring quantities of exceedingly fetid pus into the abdominal cavity. Both died in less than three days from fulminating sepsis.

One very weak old patient, in whom a torsion of the pedicle was found to be the cause of a peritonitis from which she had been confined to bed four or five weeks before her admission to the hospital, died forty-eight hours after operation.

Another patient, 67 years old, with an enormous tumor universally adherent, recovered from the shock of the operation without difficulty and seemed in a fair way to recovery, when, on the fifth day, there appeared evidences of pneumonia, which ran a fatal course in three days.

While the above seven deaths may be classed as unavoidable, I cannot claim the same with a perfectly clear conscience for the next two. A girl with an ovarian cyst was admitted to the hospital with symptoms of peritonitis. The operation showed recent parietal, intestinal, and omental adhesions, for which, however, no cause could be discovered. Death resulted on the seventeenth day, due, as the autopsy showed, to a purulent peritonitis, at least two quarts of free pus having been found in the abdominal cavity. Whether the sepsis antedated the operation or was introduced at the time we have, of course, no way of knowing.

The next case was a young, vigorous woman, from whom a dermoid cyst was removed without difficulty. Immediately after the operation I was compelled to leave the city, and on my return eight or ten hours later I was shocked to learn of her death. She went into a gradual collapse, for which I have no other explanation than consecutive hemorrhage due to slipping ligatures. No autopsy could be obtained. Both these deaths occurred among my earliest cases, which, however, is scarcely an excuse, especially for the last one, when prompt interference might have saved a life.

One of the most frequent complications during the growth of an ovarian cyst is axial rotation, or torsion of the pedicle.

It occurred twelve times. The symptoms attending this sad accident are usually so acute and characteristic, and accompanied by so much local and constitutional disturbance, that the case, 1413, must certainly be regarded as a remarkable one. A complete torsion of the pedicle was found and the cyst was surrounded by adhesions of a recent character, though absolutely no history could be obtained of any such trouble, nor was the patient at any time during the last year or two compelled to remain in bed. The patient, an old lady 65 years of age, of more than ordinary intelligence, was carefully questioned, but she denied having had any symptoms whatsoever accompanying such an accident. The only disturbances she complained of were those of irritability of the stomach and indigestion. The supposition that the rotation was so slow and gradual that it did not seriously interfere with the circulation of the cyst, is disproved by the fact that the cystic fluid contained much blood, no doubt the result of ruptured blood vessels from venous obstruction, and by the numerous recent adhesions, evidencing inflammatory disturbances.

That an acute axial rotation of a small cyst of the right ovary may simulate an attack of appendicitis has, I believe, been repeatedly observed. I saw such a case in consultation recently, in which I unhesitatingly confirmed the diagnosis of appendicitis made by the attending physician, but at the operation the next morning an unsuspected small ovarian cyst, with torsion of the pedicle, was found to be the cause of peritonitis. That appendicitis, however, may give rise to symptoms analogous to torsion of the pedicle, and may lead to mistaken diagnosis in the presence of a cyst, has to my knowledge never been pointed out. This has occurred in three of my cases, in all of which I operated on the supposition that the inflammatory condition had been induced by a torsion. I found the cyst walls covered with recent adhesions to abdominal walls, omentum, and especially intestines, but the pedicle in a normal condition. The appendix vermiformis in all cases was firmly adherent and diseased, in two cases containing pus. One patient was quite septic before operation, with hectics, vomiting, etc. The whole cyst was necrotic, almost gangrenous, and had evidently become infected by the appendix. The microscope showed a condition of necrosis, and not malignancy as was first suspected. The uterus, a raw, bleeding mass, was removed with the cyst. Though the patient's convalescence was complicated and retarded by an attack of pneumonia, she

finally made a good recovery. It is rather a singular coincidence that another case in which we found an appendicitis, instead of torsion of the pedicle as we had expected, also passed through an attack of pneumonia during her convalescence.

Adhesions of the appendix vermiformis with a number of intestinal coils attached to the cyst wall, especially on the right side, has been observed in not a few other cases, and in only two was it examined and found diseased. A careful investigation of the appendix in the others would, no doubt, have discovered sufficient evidence of disease in that organ to explain the localized peritonitis which resulted in the adhesions to the cyst.

Rupture of the cyst preceding operation is a recognized though infrequent complication, and its import depends largely on the condition of the cystic fluid. It has been observed six times as a result of a very vigorous examination, following tapping, and from a fall; in the others it has probably been spontaneous, brought about by perforations caused by papillomata. While as a rule the peritoneum shows a remarkable tolerance to the cystic fluid, its presence in the peritoneal cavity usually causes a decided irritation with more or less thickening of the peritoneum, which was noticed in some cases covered with a peculiar whitish, sticky substance not unlike the vernix caseosa of the infant. In two cases, one a malignant cyst, the rupture was evidently followed by a higher grade of inflammation, for the fluid was found imprisoned in a sac of adventitious or pseudo membranous tissue, covering and shutting off all the abdominal viscera, so that the ovariectomy was practically extraperitoneal.

Rupture is usually followed by a very rapid increase of the abdomen. In one case the peritoneal cavity contained by weight 118 pounds of fluid, while the cyst walls only weighed $5\frac{1}{2}$ pounds, fluid and cyst, therefore, representing the enormous weight of $123\frac{1}{2}$ pounds. Another patient suffered from profound collapse for several days as a result of a fall on her abdomen with rupture of the cyst. Her abdomen then increased very rapidly, her limbs were enormously swollen, and she suffered from constant dyspnea, compelling her to remain in a sitting posture day and night. During the few days in the hospital preparatory to operation she passed only four ounces of urine in twenty-four hours. It was loaded with albumin, hyaline, granular, and epithelial casts. There was also consid-

erable valvular insufficiency. She had to be anesthetized, and the incision was made in the sitting posture on account of her inability to lie down. The abdominal walls were very edematous. The peritoneum was greatly thickened and had at first been mistaken for the adherent cyst, for which reason it was separated from abdominal walls for a considerable distance. The larger portion of the fluid was contained in a sac of adventitious tissue, of which the cyst itself formed a part. The patient rallied nicely from the operation, the quantity of urine rapidly increased, edema diminished and, along with all evidences of nephritis, had entirely disappeared on her discharge.

Another unusual complication with ovarian cyst is tubercular salpingitis. This was found present in two cases; in one, the cyst as large as a pregnant uterus at six months, the lower third was covered with tubercles, as were also the intestines in the neighborhood, while the rest of the cyst seemed normal. On the other side the tube was tubercular, cheesy, and as large as sausage. She has remained perfectly well ever since. The other had a small cyst on the left side, firmly adherent and embedded in tubercular masses, while on the other side a large tubercular tube was removed. Shortly after her return home she was attacked with *la grippe*, followed by a general tuberculosis, to which she succumbed within three or four months.

One patient, who two years previously had a large multilocular left ovarian cyst removed, presented herself for operation with carcinoma of the right ovary. That organ was found perfectly normal at the first operation.

Malignant disease of the ovary is of quite frequent occurrence. Olshausen gives the proportion as 15 per cent of all tumors of the ovary; Cohn has found 16.1 per cent among the cases operated on by Schröder; Leopold in his experience had 22 per cent, Fritsch 18 per cent. Among the 116 cases tabulated were 18 ovarian tumors of a malignant character, 5 of which were sarcoma and 13 carcinoma. If I may add to these 7 exploratory incisions for inoperable cancerous tumors not included in this report, the number would be increased to 25—*i.e.*, 20.3 per cent. But this does not give the full proportion, as we all see many cases at such an advanced stage that operation is out of the question. The fact that such a large percentage of ovarian tumors is malignant should be an important reason for operating on all ovarian neoplasms as soon as they are discovered, especially because in all probability the majority of

malignant ones are benign at the beginning and become malignant only in the course of their development.

While the treatment of ovarian tumors in general is no longer a matter of dispute, the same unanimity of opinion does not exist in regard to malignant tumors. Most authorities discourage operation on account of the great mortality and the almost certain recurrence of the disease. These are the opinions held by such recognized authorities as Spencer Wells, Keith, and Olshausen. Our newest works dismiss the subject with a few lines not at all encouraging for operative treatment. Within the last few years, however, a more hopeful view of the subject has been gaining ground. Schröder's results in a hundred operations for malignant tumors, reported by Cohn,¹ probably brought about this change. His operative mortality was 20 per cent. Of the cases recovered 15 per cent soon afterward succumbed to the disease, but 19.5 per cent were still living at the end of the first year, and in five the cure was maintained for from three to four and a half years. Leopold² and Fritsch³ more recently reported equally good results, so that the pessimistic views held in regard to the treatment of malignant neoplasms of the ovary seem scarcely tenable at the present time.

A review of my own 18 cases shows a mortality of 3, or 16.4 per cent, from operation. Of the 15 surviving patients, 1 is still at the hospital convalescing from the operation; 1 has not been heard from since her discharge from the hospital; 2 have died from the disease within three or four months, 3 within five or eight months; 1 is well at the end of six months, 1 at eleven months, 1 at the end of a year, 1 after eighteen months, 1 after twenty-two months, 1 after two years, 1 after three years, 1 after three years and two months. Another patient died three years after operation from a return of the disease in pelvic and abdominal walls. The most favorable prognosis is undoubtedly offered by the sarcomas, as none of them have so far had a recurrence. The reason of this is probably the absence of metastatic processes and the freedom from adhesions, through which the disease is easily propagated. In this I am sustained by the experience of Cohn,⁴ who says that sarcoma, so very malignant when affecting other organs, gives the best chances

¹ Zeitschrift für Geburtshülfe und Gynäkologie, Band xii., 1886.

² Bericht über die Gynäkol. Operations des Jahrganges 1891-1892.

³ Geburtshülfe und Gynäkologie, Band ii., arbeiten aus der Königl. Frauenklinik in Dresden.

⁴ Loc. cit.

of all malignant tumors of the ovary. Olshausen confirms this and observes that it rarely causes metastases. L. Pick¹ regards the prognosis of sarcoma of the ovary when bilateral as very unfavorable, but far better, even favorable, when confined to one side only.

• The fact that 3, or 20 per cent, of what seemed to be the most unpromising cases of carcinoma of the ovary have survived three years after operation, and that 2 of these are still in good health, seems to be the best argument in favor of operation in all malignant tumors as long as their removal seems possible. Abandoning a case as hopeless after an exploratory incision has demonstrated the malignant character of the tumor, is, in my opinion, unjustifiable, unless we have convinced ourselves of the inoperability of the tumor. I wish to emphasize this statement for the reason that what may appear to us clinically as an undoubtedly malignant tumor may not be cancerous at all. This fact I have learned from personal experience, as the following unusually interesting and instructive case will demonstrate. Dr. Barber, on December 10, 1895, brought a patient 47 years old to Mercy Hospital with an abdominal tumor which had been noticed for a year, but which had rapidly enlarged during the last few months. The abdomen was distended to almost the size of a pregnancy at term; there was marked emaciation and some edema of the extremities. The pelvis was filled with an irregular mass extending on both sides of the uterus, the latter fixed; a good deal of ascites. The abdomen was opened December 16, 1895, and a large amount of ascitic, blood-stained fluid evacuated. Upon either side and behind the uterus, reaching several inches above the symphysis, was a semi-solid mass firmly adherent in the pelvis and everywhere covered with cauliflower excrescences, which latter also had invaded the uterus and bladder. The intestines were here and there adherent to these masses, which, in places, were as large as a fist; then the intestines were apparently infiltrated by the same papillary growths. Wherever the finger could reach in the pelvis the same cauliflower growths were encountered, bleeding quite profusely at the slightest touch. Feeling quite satisfied of the malignant character of this neoplasm, a thorough removal of which seemed out of the question, and on account of the feeble condition of the patient, who seemed scarcely able to stand such a bloody procedure, non-interference

¹ "Zur Symptomatologie und Prognose der Sarkome des Eierstockes." Centralblatt für Gynäkol., No. 39, 1894.

was decided upon. On her discharge her abdomen had filled up to its former size and a speedy termination was looked for. You can imagine my surprise when the same patient appeared in my office two years later, in December, 1897, looking improved and in better physical condition than she was when I saw her last. She had been tapped thirteen times since the operation, but during the last three or four months the abdomen showed less tendency to refill than before and had not required tapping. The examination showed little change in the pelvis. While the tumor was considerably larger, the ascites had materially diminished.

The abdomen was reopened in December, 1897. To my surprise the cauliflower growths so profusely scattered over pelvis and abdomen were seen only here and there. The tumor, however, was universally adherent, was partly intraligamentous, and had also developed in the left meso-colon.

The operation was unusually bloody, but a complete enucleation was effected (with hysterectomy), the patient making a good recovery and enjoying excellent health ever since, as her physician, Dr. Hockenberry, informed me a few days ago.

The tumor was a bilateral paroöphoritic cyst which had completely coalesced, forming one tumor only, with two pedicles. Microscopical examination showed it to be a papilloma, non-malignant in character, at least anatomically speaking. Clinically, papillomatous tumors, according to Cohn¹ and J. Whitridge Williams,² are to be classed with the malignant tumors, on account of their tendency to secondary metastasis and their marked disposition to malignant degeneration. I am therefore justified in believing that in the course of time this would have developed into a true carcinoma.

It is often not easy at an exploratory incision to estimate the difficulties and dangers accompanying an enucleation of a malignant tumor. Their frequent intraligamentous and retroperitoneal development and their extremely vascular attachments make the procedure the most difficult and certainly the bloodiest in abdominal surgery. What may at first appear an operation of comparatively easy execution may prove an almost impossible task. In no other cases is boldness combined with quick, sound judgment so essential to success as in ovariectomies for malignant tumors.

When we consider that until fifteen years ago ovariectomy for ovarian tumors was practically the only typical operation

¹ Loc. cit.

² Johns Hopkins Hospital Reports, vol. iii.

in the abdomen with which we were familiar, we cannot but marvel at the progress and the advances made in abdominal surgery during this brief period. At present ovariectomy forms only a small percentage of the surgeon's work. An examination of the records in my service shows that the proportion of ovariectomies to intraperitoneal operations required for other pathological conditions in the pelvis and abdomen is scarcely twenty per cent. While many of these newer operations are engrossing almost our whole attention in the discussions of our societies, ovariectomy has nevertheless lost none of its interest and importance, as it is the mother operation, to which all others owe their origin.

524 PENN AVENUE.

[This paper was accompanied by a detailed tabular statement of the cases that will appear in the Transactions as published by the Society.—ED.]

ALBUMINURIA COMPLICATING GYNECOLOGICAL OPERATIONS.¹

BY

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I PRESUME that all of my hearers have occasionally had patients develop albuminuria after minor gynecological operations. Unless there is far advanced kidney lesion, the patient suffering from this complication following the minor operation rarely if ever succumbs to it. This is not true of this complication following intra-abdominal operations. I am convinced that, except septic infection, this is the gravest complication following a section with which we have to contend. Fortunately it is not frequent, but it is met with often enough to make it of exceeding interest to every one engaged in our work; this, too, because the most careful investigation and examination of the urine, made repeatedly for several days before operation, may fail to detect either albumin or casts. We feel reasonably certain the patient is not suffering from any form of nephritis and is therefore practically exempt from

¹ Read before the American Association of Obstetricians and Gynecologists, at Pittsburg, Pa., September 20-22, 1898.

the complication. We are prone to think if a patient has no organic kidney lesion, the administration of an anesthetic, with the necessary operation, is devoid of danger so far as the kidneys are concerned. This is not true. The more I see of this work the more I am convinced that we will occasionally have suppression follow, when, after a careful examination of the urine, we have failed to detect any evidence of an organic disease of the kidneys. We owe it to our patients and to ourselves to study carefully the functions of the kidney before subjecting any one of them to a surgical operation. "To be forewarned is to be forearmed." If we have a patient who must be subjected to a serious operation and we know she has a defective kidney, by careful preliminary treatment and by taking all precautions during and following the operation we put her in the best position to withstand the strain to which she must be subjected, and we almost always tide her over. The reverse may be true, even where no previous lesion of the kidney has been detected, if we subject the patient to operation without preparation.

I am convinced that the conditions predisposing to this complication are manifold and are often overlooked. Probably the most frequent cause is pre-existing nephritis. It is an unfortunate fact that careful preliminary examination of the urine may fail to give us the least clue to this morbid condition. One of these patients subjected to a section may have acute congestion of the kidney, followed by suppression, coma, and death. In contrast with these cases are those, frequently met with, giving a history of a preceding kidney lesion, the urine containing albumin and casts. Under a similar operation as to gravity, and with the same anesthetic, this patient may not have the least disturbance during her convalescence, so far as the function of her kidneys is concerned. How to reconcile these clinical facts and make them redound to our best interests is a conundrum, the correct answer to which I feel is not forthcoming. The exchange of ideas in the discussion of this paper I hope may throw some new light upon the subject.

We may have suppression of urine following the operation in patients with fatty hearts. Examination of the urine for several days preceding the operation may be absolutely negative. I have seen this complication in a number of cases, and for that reason have come to regard a fatty heart with great suspicion.

The following case, reported in full at the Cincinnati Ob-

stetrical Society last February, will illustrate this phase of the disease:

Miss K., age 40, referred in October, 1897, by Dr. Rice, of Tuscola, Ill. She was suffering from a small fibroid tumor of the uterus with profuse hemorrhage. She is a tall woman, formerly weighing one hundred and fifty pounds. In three years she added weight until she reached one hundred and ninety pounds. She was pale and anemic, with pulse above 100 but of fair volume. I advised curettage. It was done October 5, chloroform being the anesthetic. When the patient had about reached the point of unconsciousness the heart beats ceased; pulse was imperceptible; respirations spasmodic and at long intervals. After several minutes she was resuscitated, ether was given, and the curetting finished without further incident. She left the hospital in two weeks. This operation failed to relieve the patient. In December there was discovered a tumor at the left of the uterus the size of a large orange. Hysterectomy was advised and performed December 21. Owing to our experience with chloroform in the previous operation, ether was used. At the commencement a half-pound can of Squibb's ether was opened; at the close more than one-third of it remained in the can. No difficulty was experienced during the operation. The patient was put to bed with a pulse of 100. Six hours later the pulse was 85, temperature 98.6°. In the first nineteen hours she secreted twenty-four ounces of urine heavily loaded with albumin. During the next seventy-four hours there was almost complete suppression. Coma became marked. It was promptly relieved by steam baths and catharsis. At the end of the seventy-four hours she was catheterized by the nurse and one and a half ounces of urine obtained. From this on she rapidly improved and made a good recovery. The urine was tested before operation and neither albumin nor casts were present. Since her convalescence repeated examinations have not revealed a trace of albumin nor a cast.

I have also seen suppression of urine follow operation in women suffering from atheromatous arteries, with such frequency as to make me fear the effects of the anesthetic upon the kidneys in these patients, as the following case will illustrate:

Mrs. R., age 63, referred in January by Dr. Roberts, of Cheney, State of Washington. She was suffering from cancer of the body of the uterus. She also had atheromatous arteries.

There was a diminished quantity of urine, but no albumin or casts. Abdominal hysterectomy was performed January 13, 1898. She went through it well, chloroform being the anesthetic used. The first twelve hours she secreted five ounces of urine heavily loaded with albumin. The urine gradually decreased in quantity, until at the end of fifty hours there was scarcely any secreted. She remained in a condition bordering on coma for two days. She then commenced to secrete from six to nine ounces of urine in twenty four hours. The improvement lasted for more than a week; then there was sudden suppression and she was profoundly comatose for ten or twelve hours. She was again tided over by hot steam baths and free catharsis. At the end of forty-eight hours she was secreting seven or eight ounces in twenty-four hours. The quantity increased at the end of two days to fourteen ounces a day. At the end of the third week following the operation she had suppression for the third time. It lasted two days. The kidneys then commenced to perform their function, and in four days she was secreting twenty ounces in twenty-four hours. At the end of another week it had increased to thirty-four ounces. She recovered and has since remained well. The albumin has entirely disappeared.

In all cases subjected to section every precaution should be taken to guard against this complication. Every case should be in the hospital or the place to be operated upon, under the observation of the operator, for a period of not less than four days. If it is found that there is a defect in the kidneys, this period should be prolonged to a week or ten days, so as to give ample time for careful investigation as well as for the preliminary treatment. The diet should be properly regulated. There must be a thorough cleansing of the intestinal tract. I am favorably impressed with the plan of giving two to three grains of calomel every second or third night, followed with Rochelle salts or a seidlitz powder in the morning. She should have two hot baths daily and be thoroughly rubbed with vaseline afterward. This greatly favors subsequent diaphoresis. The urine should be examined from time to time and a careful record made as to the presence or absence of albumin, pus, blood, or casts. Even if the examination prove negative it should be repeated twice daily for four days at least. The patient should drink large quantities of water. If we adopt this plan and there is a pre-existing nephritis, our patients will be better prepared to go through the operation successfully. If

there should be no defect, this is part of the treatment that should be instituted in every case subjected to section.

If we find the least indication of pre-existing nephritis in our preliminary treatment, the anesthetic selected, regardless of the age of the patient, should be chloroform. The known irritating effect of ether upon the kidneys, and the great danger of nephritis following its administration in abdominal operations, have led me to abandon its use and substitute chloroform. In a hundred and ten sections in which ether was the anesthetic, in thirty-three cases, or thirty per cent, there was a trace of albumin in the urine for the first twenty-four hours after the operation. In ten cases, or nine per cent, there was partial or complete suppression varying from one to four days. In a few of these cases the patient would secrete two or three ounces of urine in twenty-four hours, but in the most of them the suppression was complete. These patients' lives were jeopardized during this time, and two of this number died in coma.

In five hundred sections in which chloroform was the anesthetic, in eighty-five cases, or seventeen per cent, there was a trace of albumin in the urine for the first twenty-four hours after the operation. In ten cases, or two per cent, there was suppression varying from one day to four weeks. In all these cases the suppression was complete for one or two days. Four of this number were known to have chronic nephritis and died of uremic coma.

While using ether almost exclusively in my early operative work, seven patients with marked kidney lesions were given chloroform instead. They are included in the chloroform list. In the ether list were no patients who were known to have a pre-existing nephritis. In the chloroform list were thirty-five cases who were known to have nephritis before administering the anesthetic. The deaths in this list were from the known cases of kidney disease.

There has recently appeared in the *New York Medical Record* of September 3, 1898, an article by Drs. W. H. Thomson and Robert Coleman Kemp on "Experimental Researches on the Effects of Different Anesthetics." They demonstrate conclusively that during etherization complete suppression occurs. Under chloroform the renal secretion is not interfered with. With these facts before us, one does not have to draw upon the imagination to realize that this suppression may become more or less permanent owing to pre-existing kidney disease or to the prolonged administration of the drug. Thus we have a satis-

factory explanation of many of the clinical phenomena following the use of ether. We are aware of the fact that some of the leading operators in the country use ether almost exclusively in their operative work and prefer it to chloroform. We found the irritating effect of the ether so frequent that we abandoned it, and would not willingly go back to its use again.

While there are immediate dangers in the use of chloroform, they are greatly diminished if it is administered by one who is expert in its use. It should be a man who is not interested in any of the operative procedures, who has no ambition to be an operator and therefore will not be tempted to neglect his very important duty in the midst of an operation in order to witness some interesting part of it. One who devotes his time to this branch of work will get his patient under the influence of the anesthetic in the shortest possible time and will give the minimum quantity. He will keep his patient thoroughly under, thus aiding the operator in shortening the time of operation, which is a distinct advantage.

The temperature of the operating room should be at least 80°. The patient's body should be protected by carefully adjusted blankets covered with sterile sheets or towels. The ventilation should be so arranged that there will be an abundance of fresh air without having a draught directly over the patient. The operating table should be so adjusted that no part of the patient's body is wet except the field of operation. There must be free exit for water in case of flushing, so that this important manœuvre may be successfully performed without soiling the patient's wraps. The patient should be kept dry and warm throughout the operation in every case. I am convinced that wetting large surfaces of the body during the operation, saturating the patient's wraps with water in the early stages of the operation so as to thoroughly chill the body, increases the dangers of congestion of the kidney and adds to the danger of suppression. Where we have acute nephritis following any surgical procedure we are so used to blaming the anesthetic that we overlook other causes, of which the one just mentioned is chief.

Few conditions have a graver prognosis than nephritis with suppression following a section. It is a great shock to an operator, everything having gone satisfactorily, to find, at the end of twelve to twenty-four hours, the urine heavily loaded with albumin and the secretion greatly diminished.

In the treatment of these cases I have nothing new to offer.

If we can succeed in getting the bowels thoroughly moved before the patient is in coma, we may be able to tide her over. To give diuretics in these acute cases only gives the patient an additional load to carry. Hot packs or hot-air baths to secure excretion through the skin are more effective than diuretics. If the patient has had the preliminary treatment suggested, the skin will compensate for the kidneys, without much risk to the patient, for two or three days. Free diaphoresis should be induced as often as she becomes drowsy, if that should be six or thirty-six hours. I have entirely abandoned the use of pilocarpine for this purpose, owing to its depressing effect upon the heart and the danger of congestion of the lungs following its administration. The other means of producing diaphoresis are much to be preferred in these cases. In patients suffering from fatty heart I have added to the foregoing digitaline and strychnia, hypodermatically administered, with full doses of caffeine every three or four hours. In patients with atheromatous arteries it is a difficult task to safely tide them over. By persistent effort, extending over two or three weeks, we have had the satisfaction of seeing three or four patients recover who secreted only from four to six ounces of urine in twenty-four hours during that time. If we get the bowels moved they will aid the skin in eliminating the poison. I usually rely on small and repeated doses of calomel, because all these cases are considerably nauseated and inclined to vomit easily. After the bowels have been moved once thoroughly, any of the hydragogue cathartics which seem best in the particular case may be used with advantage. In the more chronic form, after the seventh or eighth day of uremia, I not infrequently use a drop to a drop and a half of croton oil. This seems to act better and with less depression than many of the other popular remedies.

628 ELM STREET.

SOME FACTS IN REGARD TO UTERINE FIBROIDS.¹

BY

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It is not my intention to enter into any lengthy discussion in regard to the etiology, symptoms, alterations in form, structure, degenerations, complications, or the ultimate results in

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uterine fibroids. Neither do I expect to say much, if anything, new in regard to these neoplasms. But I hope some of the statements made as the result of a somewhat extended experience in dealing with these growths will lead to a discussion which will throw more light upon some questions that are at present obscure. As it is only intended to speak of a few facts in regard to uterine fibroids, my paper may seem somewhat disconnected.

Whatever the real cause of uterine fibroids, the question seems to be as unsettled now as at any previous time; and, although several very ingenious theories have been advanced, none of them have stood the test of investigation. Possibly some of the predisposing causes, such as age and race, are fairly well settled; but as to the exciting cause nothing whatever is known. It is a well-established fact that most fibroids are slow in growth; yet some which are not fibrocystic grow rapidly, while others may grow slowly for a time and then take on a rapid development. Although it is usual for these tumors to become indurated and to lessen in size after the menopause, or at least cease to grow, yet during the past fifteen months I have seen two cases where the growth was more rapid, the complications more marked, and the removal of the tumors became a necessity. A fibroid may spontaneously almost if not entirely disappear, even when pregnancy does not occur. I have seen one case in which the tumor shrank two-thirds while the patient was still in the prime of life and all her functions normal, yet she was not under any kind of treatment and, as far as could be ascertained, there was no especial reason for this change. It is said there are many changes in structure which may occur in the growths, yet the writer has seen only three forms—fibrocystic degeneration, calcification (which is said to be exceedingly rare), and suppuration, both the latter changes occurring in the same case.

During the past year I removed by abdominal hysterectomy a symmetrical intrauterine fibroid weighing twelve pounds. Upon cutting through the middle of the mass there was found a calcified portion, nearly two inches in diameter, of irregular shape, located in the centre of the tumor. In front and below this was a pus cavity slightly larger than the calcified mass. The pus was thick and of greenish hue. Above and slightly posterior to the calcified mass was another pus cavity, about two-thirds the size of the first one mentioned. The pus was of the same consistence as in the other, but lighter in color.

There was no connection between the pus cavities nor between them and the calcified mass. This patient was 43 years old, married twenty years, sterile; had flowed profusely for the past three years; was very weak and anemic; had been confined to the bed for several months. She bore the operation well and made an uneventful recovery.

I think there is no doubt that malignant degeneration of fibroids may occur, although I have never seen a case and do not think fear of this change deserves much weight as a reason for operative interference with the tumors. But there are frequently changes in other organs that are quite serious in themselves and indicate the necessity for removal of the growth; in fact, it would be much safer for the patient if the tumor was removed before the changes occurred. One of these is fatty degeneration of the liver. This condition is a frequent complication of uterine fibroids, and is probably due to change in the portal circulation. Another is disease of the kidneys, as pyelitis, pyelonephritis, or hydronephrosis. The changes are caused by pressure on the ureters and are of comparatively frequent occurrence. Lesions of the heart have been common in my experience. Until within the past three years I did not keep a complete record of these changes; but since that time, in thirty-three cases, fourteen have had some form of heart lesion, and the complication did not have any relation to the size of the tumors, but in every case except two the flow at the menstrual period was excessive, and in most cases continued much longer than normal. Hence, from personal experience, I judge that menorrhagia or metrorrhagia, or both, are the most frequent causes of heart lesion in uterine fibroids—in just what manner I am unable to say, unless the excessive loss of blood at regular or irregular intervals not only weakens the heart muscles, but produces anemia and a general cachectic condition which favors the production of the different lesions.

Pozzi says: "An abdominal tumor causes an increased vascular pressure and so reacts upon the cardiac muscles. As to the final degeneration of the heart, it is strongly favored by the anemic and cachectic condition of certain subjects." I believe the anemic and cachectic conditions which result from the loss of blood are the chief causes of these lesions, and not the increased vascular pressure. That being the case, any form of fibroid in which the loss of blood is greater than normal is dangerous, the danger being in proportion to the anemia or the amount of blood lost. I do not wish to be understood that the

danger is due to this one cause alone, but it is one of the most serious conditions, and is the most potent factor in the production of heart lesions. Of the two cases in which the flow was not excessive, in one the tumor was large and symmetrical; the other was much smaller, but nodular in character.

Even the arrest of the hemorrhage and the shrinkage of the tumor do not always prevent the development of heart lesions when once begun, as the following case illustrates:

Miss C., age 35. Menstruated first at 14, regular and flow normal, until four years ago the flow became more profuse, increasing in amount, and periods were prolonged. Upon examination under anesthesia, found an interstitial fibroid, the uterus being three times its normal size. As the patient was opposed to the removal of the organ, it was thoroughly curetted, with the result that the hemorrhage ceased and two years later—which was the first time an examination was made—the uterus had become reduced to nearly its natural size. Yet during this time a well-marked mitral insufficiency with the usual accompanying hypertrophy was developed. At the time of curetting a slight murmur was detected, but no hypertrophy was manifest. This lesion may, however, have been due to some cause entirely foreign to the fibroid, yet none could be discovered.

In the following case the result was different: Mrs. M., age 33 years; medium height, very stout, with ruddy complexion. Menstruated first at 14 years, regular and normal. During the past three years the flow has been about twice as much as formerly, extending over nearly three weeks. An abnormal sound—it could hardly be called a murmur, and I do not think it indicated structural change—could be detected at the apex of the heart. Nine months after the removal of a large fibroid tumor by abdominal hysterectomy, the patient was perfectly well and no unusual sound could be heard. Possibly the fibroids with the accompanying hemorrhage were not the cause of the heart lesions in these cases, but I think they were. In one case the trouble was fully developed and continued after the removal of the cause; in the other it was in its incipency and the removal of the cause prevented any further development and promoted the recovery of the patient.

I am well aware that I have not proved that the excessive loss of blood is the cause of the heart lesions, yet I believe it is more than a coincidence and at least deserves further investigation. It is true that many patients go through life with a

fibroid without much inconvenience, yet I look upon such growths as a source of danger, not only in themselves—depending upon their size, shape, and location—but they are often more dangerous from their complications. Although quiet now, a tumor may within a short time develop serious symptoms, and should be carefully watched and not allowed to impair the general health of the patient. Palliative treatment, such as tonics, curetting, electricity, etc., is beneficial in some cases. I have also seen good results in a few cases from the use of the thyroid extract. In most cases, however, the removal of the tumor or tumors by myomectomy, when it can be done, or hysterectomy, either abdominal or vaginal as the operator may decide, is the only satisfactory procedure. The mortality is not sufficiently large to justify us in allowing the patient to drag out a miserable existence. To be sure, any complication adds to the danger of the operation, especially lesions of the heart; yet they do not contraindicate operations unless well advanced, and whoever has the patient under observation should not allow serious complications to occur. When the growth does not cause much trouble let it alone, but watch it closely, and operate as soon as the tumor begins to prove troublesome in any way.

405 FRANKLIN STREET.

SURGICAL TREATMENT OF MORBID CONDITIONS INVOLVING THE BROAD LIGAMENTS.¹

BY

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NOTWITHSTANDING that the results obtained in abdominal surgery are still adding brilliancy to the record already achieved, there arise from the numerous cases that present themselves many complications which become the source in no small degree of anxiety to the operator. Among the perplexing problems that are sometimes met with is the question involving the method of dealing with lesions and morbid conditions that affect the broad ligaments.

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An hematoma occurring from rupture of the sac of tubal pregnancy may be enclosed within the structures of the broad ligaments, or be so embraced by those parts as to prevent further hemorrhage and to afford conditions favorable for the continued development of pregnancy. The results of such an accident cannot be expected to yield permanent relief, but only to postpone the time when more radical and sometimes more difficult surgical measures will have to be instituted for affording chances for the patient's recovery.

In those cases, however, in which the rupture of the tube takes place merely in the abdominal cavity, the loss of blood and the shock may be severe, but if the patient does not succumb at the first onset (as she often does not) a simple abdominal incision and the application of a ligature upon the bleeding vessel may prove sufficient for her speedy restoration.

In those cases in which the hematoma is enclosed within the broad ligaments, and the ovum with the effused mass is afterward absorbed, no untoward symptoms may occur. So also in cases in which mummification takes place, the patient may escape without the necessity of requiring operative interference.

When, however, suppurative processes appear, or an adipoceration takes place, or an osteopedion formation results, as occurred in a case seen by me in May last, surgical measures of no unimportant character will be demanded for the patient's restoration.

Varicocele of the broad ligament, though sometimes difficult to diagnosticate, is another condition that has to be dealt with. Pelvic peritonitis, cellulitis, salpingitis, and oöphoritis having been eliminated from the list of diseases with which such a condition of the ligaments may be confounded, as well as hypertrophy of the ureter or an accidental or a congenital enlargement of that structure, the isolated, undue development of the ovarian veins affecting to a considerable extent the condition of the vessels of the pelvis, and particularly of those of the broad ligament, can often, nevertheless, with great certainty be recognized. Excision, including portions of the broad ligament with the tube and ovary, may furnish the only means of a permanent cure. In such cases the employment of the cordwainer's suture (*sutura sutoria*), into which aseptic animal ligatures can be embodied, will be found to be the safest, easiest, and most effectual means for hastening this result.

A cyst of the broad ligament is another development that

requires careful diagnosis. The larger variety, or those usually termed polycystic in character, taking their origin primarily in the layers of the broad ligament, often acquire considerable dimensions before being discovered. Such was the history of a case that I met with during the last year. The patient had been variously treated by several experts without apparently receiving any beneficial results. The rapid growth which it afterward assumed brought the patient under my care. The history of the case, showing the slowness of the changes during its early stages, the elimination from the category of other conditions affecting the pelvis, the displacement of the vagina forward, the freedom of the patient from hemorrhage and from other symptoms characteristic of uterine myomata, and the absence at any time of shock or of any pathognomonic condition attendant on the sudden occurrence of hematoma or hematocele, were in the case the chief features that led to the correct diagnosis. Though the tumor was sessile and quite firmly bound down, it was enucleated after some difficulty, without much sacrifice of the tissue of the surrounding ligamentous structures.

In another case of a cystic development which came under my care enucleation could not be thoroughly effected, so it had to be marsupialized by suturing the opening of the sac to the abdominal edges of the incised tissue. The patient made a rather slow recovery.

The question is sometimes raised whether it would not be best to decline in such cases a resort to operative interference, as is recommended in the smaller variety of such growths. In answer to this it may be said that no operator can definitely determine what would be the best course to pursue until after the abdomen has been opened and a trial has been made to effect removal of such a morbid growth. In cases complicated with cancerous, sarcomatous, or with other malignant neoplasms between the layers of the broad ligament, especially when the surrounding glandular tissue has become much involved, treatment by extirpation, excision, or enucleation promises to be productive, for the most part, of little relief. Such, nevertheless, seems to be the daily experience of operators, though statistics may be so presented as to show a different result.

Myomatous and fibromyomatous formations originating in the broad ligaments demand early treatment, by the adoption

of surgical measures, on account of the danger of such growths taking on malignant changes.

There has recently come under my care a case of a uterine fibroid that had taken on such a transformation. The history of the development shows that it was originally an uncomplicated case of intramural uterine fibroid, portions of which after its removal presented evidence that it had undergone a calcareous change, while other sections gave indications that sarcomatous tissue was beginning to engraft itself upon it. Such a condition may by some be thought to have been a mere accidental complication, but the history and the microscopical examination of the sections of the growth strengthened the conviction that the continued and repeated irritation resulting from the presence of the neoplasm must have attracted to its structure the malignant sarcomatous element with which it was being invaded.

If a simple, uncomplicated case of uterine fibromyoma is subject to malignant transformation, the same change may be expected to follow the presence of a similar growth that is intraligamentous.

A fibrocystic growth is a development which may occur within the intraligamentous tissue. Such neoplasms do not strictly belong to the classification of cystic tumors, since their cavities have not a lining of epithelial tissue. The formation of these hollow spaces takes place through the absorption of the softer and more fluid portions of the fibroid or myomatous mass. In such cases the treatment must be similar to that adopted for the removal of the more solid growths.

One of the obstacles encountered in their extirpation arises from the extensive adhesions in which they may be enveloped. In effecting such removal the danger of injuring important blood vessels will have to be considered. In the ablation of all intraligamentous growths the same precaution will have to be observed, for on opening the abdominal wall there will sometimes be met an excessive development of vascular tissue or membrane which will prove to be the source of no small degree of impediment to the successful removal of the offending mass.

In such difficult operations I have found that the cavity from which the intraligamentous neoplasm had been enucleated could, as before intimated, be obliterated by the liberal use of aseptic animal sutures. These should first be introduced at the

bottom or at the lower edges of the cavity, in order that the sides of the opening may be so firmly brought together that there may be left no pockets or pouches into which blood or other fluid can ooze and thus become the nidus for septic processes.

It is no wonder that under the use of wire, silk, silkworm gut, or of other such unsuitable materials many untoward results have followed. The details of these measures, however, should be left in a great degree to the individual operator, who may be exceedingly expert in the use of some one particular method which he has followed, but who would find it exceedingly difficult to change his mode of operating in cases demanding the highest skill.

In some cysts of the paroöphoron and parovarium much distension or displacement of the broad ligaments takes place. The non-sessile character of such growths may sometimes facilitate their removal. A condition somewhat similar I had the opportunity to see April last. After the abdomen had been opened the growth was easily removed. It is worthy of note that the pressure which had been exercised by the cyst on the surrounding parts contributed to this successful effort at removal. In one case that I saw in consultation the vascular tissue was so extensive that there was left but a small space in which an incision for the extirpation of the growth could be made.

Some authorities advise as a primary procedure that the ovarian artery should be ligated. This would be an admirable initiative measure, provided that it was not thought that the hemorrhage could be otherwise controlled.

The ligation of the various bleeding vessels as they present themselves appears, however, to be the more conservative course of proceeding. In operating on cysts or morbid growths developing between the broad ligaments, care has, of course, to be exercised, as in cases demanding hysterectomy, to avoid injuring the ureter as well as the more important blood vessels. In those cases in which numerous adhesions have occurred as the result of inflammatory or of other morbid processes, a loop of intestine may be found entangled in the mass; such a condition would necessitate the employment of much precaution, lest in the course of extensive manipulation to free the parts undue violence be done to important structures involved. In those cases in which the cyst or growths are only partially

intraligamentous, removal by enucleation can be effected more rapidly.

The cavity or bed of the tumor should be obliterated, as before remarked, by suturing its sides together ; in cases of such a character it will rarely be necessary to ligate previously the ovarian or other large arteries. Drainage, as far as possible, should be dispensed with. Reliance should be placed on the scrupulous care taken in the management of the toilet of the peritoneum and on the aseptic condition of all materials employed in the operation.

825 MASSACHUSETTS AVENUE.

INJURIES OF THE GALL DUCTS.¹

BY

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A BRIEF review of some of the more important points concerning the anatomy of the gall ducts and the physiology of the bile is deemed advisable before taking up the other branches of the subject. In this paper we are concerned only with the cystic, the right and left hepatic, and the common ducts, and more especially with the common duct, because its greater length and less protected position render injuries to it more frequent than injuries to the hepatic ducts, while injuries to the cystic duct present no features differing in practical import from injuries to the gall bladder.

Uniting at the under-surface of the liver, the right and left hepatic ducts form a single duct, which, after passing downward and to the right about one and a half inches, is joined at an acute angle by the cystic duct coming from the right above, thus forming the ductus communis choledochus. The general direction of the common duct is downward along the right border of the lesser omentum to the inner side of the descending portion of the duodenum, where it empties by piercing the walls of the gut obliquely, thus making the opening valve-like in action. Just before piercing the gut the common duct receives the duct from the pancreas. By passing the finger from left to right along the lesser omentum until the

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right margin is reached, then hooking the finger under this margin through the foramen of Winslow, the common duct may be lifted forward. The common duct lies in front of the vena portæ, to the right of the hepatic artery, and is crossed in front by the pyloric and gastroduodenal arteries. The superior pancreatico-duodenal branch of the latter artery lies in close relation to the right side of the lower two-thirds of the common duct. It is important that the changes in the position of the liver and the consequent changes in the position, direction, and relations of the ducts, due to relaxation of the abdominal walls, etc., be borne in mind. I have myself seen the fundus of the gall bladder below the umbilicus in a case in which I did a cholecystotomy for gall stones.¹

A knowledge of the physiology of the bile is as necessary to correct treatment of the cases under consideration as is a knowledge of the anatomy of the bile ducts, but the question as to just why the bile is necessary to the health of the individual does not particularly concern us now. Whether the bile assists absorption or digestion, or both, or whether it acts as an antiseptic, or whether, as Küss says, it simply "sweeps the workshop clean in which the laborious task of absorption has just been completed," matters not so far as concerns our present purposes. Suffice it to say that physiological experiments and clinical observations leave no room to doubt that the function of the bile is necessary to health and life. We do not know upon what Mr. Tait bases his statement² to the effect that all of the bile may be diverted from the intestines in the human subject without harm resulting therefrom, but we cannot accept it as true, inasmuch as it is opposed to the opinions of physiologists and is not in accord with clinical observations. The practical importance of the bile as an excretion is quite as great as is its importance as a secretion. However, the clinical picture of cholemia is too familiar to require description here.

Injury to the hepatic ducts is usually accompanied by injury to the liver also. This does not apply, of course, to those cases in which the injury is produced, either intentionally or by accident, in the course of operations. One would expect injury to the common duct to be complicated usually by hemorrhage, owing to the close relation it bears to numerous large blood vessels; but this does not seem to be the fact, judging from the few cases reported. I do not wish to be understood as meaning that hemorrhage is an infrequent or unimportant compli-

cation of injury to the bile ducts, but simply that it does not seem to occur so frequently as the relative anatomy of the bile ducts would lead one to expect. This may be accounted for by the relatively greater power of resistance of the blood-vessel walls.

No case of the rupture of the gall bladder or gall ducts without penetration of the abdomen is reported in the "Medical and Surgical History of the War of the Rebellion." Two cases of wounds which were supposed to involve the gall bladder are reported.³ One case of gunshot wound of the gall bladder,⁴ and one of gunshot wound of one of the branches of the hepatic duct⁵ complicating a wound of the liver, are reported, in which the diagnoses were confirmed by autopsy. The cases reported show the most frequent cause to be forces which act in a crushing manner, such as a blow on the abdomen or the passage of a wagon wheel over it. The presence of gall stones predisposes to rupture of the gall ducts from trauma, and their presence may cause ulceration and perforation.

The symptoms, mentioned in the order in which they usually occur, are pain, shock, ascites, acholia, jaundice, and other symptoms of cholemia, peritonitis, and inanition. Pain is usually severe, and most marked in the right hypochondrium. The pain may, however, be severe in other regions of the abdomen without there being any signs of injury to account for it, and slight or entirely absent in the region of the ducts. Shock is generally pronounced and the reaction therefrom rather slow. So called secondary shock or unduly prolonged shock means hemorrhage and demands immediate celiotomy. I believe it is possible for the shock to prove fatal in these cases through injury to the solar plexus.

In cases wherein the lesion is of such a nature as to divert nearly or quite all of the bile from the intestine into the cavity of the peritoneum, ascites develops rapidly. Estimating the daily quantity of bile at two and a half pounds, as given by Flint, we can appreciate the diagnostic importance of this symptom. In a case of rupture of the gall bladder reported in Holmes' "System of Surgery" (vol. ii., p. 419), marked distension of the abdomen was noted two days after the injury. In my own case (reported below) it was not noticed by the attending physician until about a week after the injury, but it recurred to the extent of ten pints in four days after tapping. The ascites is usually general, but may be localized by the

formation of adhesions or by the filling of the lesser cavity of the peritoneum. This latter would be more likely to occur in cases of rupture of the common duct at the margin of the foramen of Winslow. Filling of the lesser cavity of the peritoneum with bile would produce an ascites of the upper abdomen, which would soon become general unless the foramen of Winslow were closed. The ascites may be general at first, and, after tapping, become localized.

The degree of acholia will depend upon the completeness of the diversion of the bile from the intestine, and is therefore incomplete in rupture of the cystic duct or of either of the hepatic ducts and in small perforations of the common duct. This is also true of jaundice, and, indeed, of all symptoms which are due either to the absorption of the excretory elements of the bile or to the absence from the intestinal canal of the secretory elements of this fluid.

I believe that jaundice is more likely to occur in those cases wherein the escape of the bile into the peritoneal cavity is preceded by obstruction of the bile ducts, and in those cases in which the bile within the peritoneal cavity is subjected to pressure. I know of no other way of accounting for the absence of jaundice in my case. Certain it is, at any rate, that jaundice is not a constant symptom of escape of bile into the peritoneal cavity.

Rupture occurring in the presence of a cholangitis enhances the danger from peritonitis. If the ducts are healthy at the time of injury the principal source of infection is the bowel, through regurgitation along the duct. Other things being equal, the danger of infection from this source increases in proportion as the injury approximates the bowel. However, the valve-like character of the opening of the duct into the bowel renders infection from this source less likely than one might on first thought suppose.

Bile, if aseptic, will not produce peritonitis. Practical experience has shown that the fear surgeons formerly entertained of bile within the peritoneal cavity is unfounded. Lane⁶ reports a case of rupture of the gall bladder, which recovered after operation, in which for five weeks a considerable quantity of bile was present in the peritoneal cavity.

In case the bile is completely diverted and the patient lives long enough, symptoms of inanition will develop. They were by far the most prominent symptoms in my case after the tapping, notwithstanding that there was neither vomiting nor

diarrhea, that the appetite was voracious, and that, so far as could be determined without chemical or microscopical examination of the stools, the digestion was perfect.

Fatty stools seldom occur. This condition of the stools, together with other signs and symptoms of faulty digestion, would no doubt be more likely to arise in cases where the rupture occurs close to the opening of the pancreatic duct, as in such cases there might be escape of the pancreatic juice into the abdomen.

Mental hebetude, peevishness, subnormal temperature, and slow pulse are usually present. If peritonitis supervene the pulse will be quickened and the temperature will rise, but not in the same degree as would occur in an equally severe peritonitis from other causes.

Marked infection may be present with slight or no elevation of the temperature and very little acceleration of the pulse. This influence of cholemia on the pulse rate and temperature in the presence of infection is an important clinical fact.

Janeway⁷ reports a case of rupture of the bile duct and abscess of the diaphragm. In my case a large sub-diaphragmatic abscess on the left side was found at the autopsy. While I was not able to get the full report of Janeway's case, I presume it was also a case of subphrenic abscess. It is well to bear in mind the possibility of the existence of this complication, and to satisfy one's self, when the abdomen is opened, whether or not such a condition exists.

A satisfactory diagnosis cannot be made without opening the abdomen. Exploratory celiotomy should be promptly done in all cases of injury to the abdomen in which the symptoms are such as to arouse any suspicion of serious injury to the abdominal contents. Lorence Heister, in his work on surgery, published in 1779, speaking of injuries to the liver and its ducts, says in effect that art can do nothing for these patients, and that the doctor should advise them to turn to the Lord for relief. While modern surgery has rendered the prognosis in these cases much less unfavorable than it was even twenty years ago, it still remains grave, and I believe it possible to achieve still better results than we have yet attained, by prompt and intelligent surgical interference. The treatment is, of course, largely surgical. A clear conception of the dangers arising from the injuries under consideration will lead to the adoption of correct methods of treatment.

Cholemia, acholia, and infection are the conditions to be

avoided or remedied. Perfect drainage will obviate the first and last, but to obviate the danger arising from acholia we must devise some means by which at least some bile may get into the intestinal canal.

Cystectomy with closure of the duodenal end is the method of choice in cases of rupture of the cystic duct. If accessible the rent may be closed by sutures. In rupture of either hepatic duct it may be possible to close the rent by sutures; but in most, if not all, cases of complete division of the duct the use of gauze drainage or combined gauze and tubular drainage will be the only feasible method of treatment. To this it would perhaps be well to add ligature of the duct on the duodenal side of the rent. This will lead to a permanent biliary fistula if the patient survives, but the danger from acholia would perhaps not be great, and we can scarcely hope for a re-establishment of the flow of bile through the normal channel under these circumstances. If the perforation be small it may close and the patient recover, if drainage be established. Landerer's case (see Case 1) recovered under repeated punctures. Kernes' case (see Case 3) recovered after the abdomen was opened, dried, and then closed without drainage. This method of treatment does not, however, appeal to me as being rational, notwithstanding the patient's recovery.

Injuries of the common duct, when they result in complete diversion of the bile from the intestine, are inevitably fatal, unless by some means the diversion be overcome. That large quantities of bile may be discharged through abdominal fistulae for an indefinite period without harm to the individual is, of course, a matter of frequent experience, but I know of no case which disproves the statement that complete diversion of the bile from the intestinal canal is, if not remedied, fatal. Small openings in the common duct may be sutured, or, if this be not feasible, they may be treated with drainage, in the hope that the opening will close spontaneously.

When, from an examination through an abdominal incision or from an examination of the stools, it is learned that no bile is flowing into the bowel, no time should be lost in re-establishing this flow. End-to-end approximation of a completely divided common duct by suture or other means is possible, perhaps, in some cases, but the difficulty I had in my case in finding the bowel end of the duct at the autopsy leads me to think this operation not feasible. I apprehend that the flow of bile from the liver end of the duct would make the identification of this

end easy. If both ends of the divided duct can be found, the best method to adopt would be ligature of the bowel end and implantation of the liver end into the duodenum. A method less ideal, no doubt, but more often practical, would be closure of both ends of the divided duct, in case they can be readily found, and cholecystenterostomy. In case the injury to the duct cannot be easily found, and the condition of the patient is such as to demand that the operation be done quickly, it would be best, perhaps, to do a cholecystenterostomy and use a gauze tampon for the double purpose of establishing drainage and encouraging the flow of bile through the newly formed channel, and thus hasten the closure of the rent in the duct. If haste is not essential the union of the gut and gall bladder may be made by suture; but, in many cases, to save time is to save life, and for this reason the use of the Murphy button is advised in all cases where speed is essential. In cholecystenterostomy with closure of the common duct it is important that the anastomosis be made as high in the bowel as is possible, in order to avoid fatal or serious acholia.

Cases will present themselves now and again in such deplorable condition that radical operation will be out of the question. Under such circumstances the operation should comprise the doing, in as quick and simple a way as is possible, of those things only which are immediately necessary to save life, such as the establishment of drainage when life is threatened by peritonitis, or the use of gauze packing for hemorrhage. The immediate danger having been averted by these measures, a radical operation may be done later on when the patient is better able to stand it.

Theoretically one would seem warranted in expecting much relief from the symptoms due to the absence of bile from the intestines from the administration of inspissated ox-gall and salol, or other intestinal antiseptic, together with the use of predigested (emulsified) fats; but in my own case the use of salol and ox-gall seemed without effect. No emulsified fats were given, as no fat was seen in the stools.

As stated in the earlier part of the paper, hemorrhage of an alarming character has not occurred so frequently in cases of injury to the gall ducts as the anatomy of the parts would lead one to expect. When it does occur it must be controlled by the usual means, unless it be from a wound of the portal vein. In small wounds of this vessel lateral ligature may be used, but in larger ones reliance must be placed in sutures. Lepine^{*} says

that wounds of this vessel, except small punctures, are necessarily fatal. I venture to assert that future experience will prove this to be untrue. That such wounds will always be attended by a very great mortality is unquestionably true, but I know of no reason why we may not be able occasionally to control the hemorrhage by suture.

Because of their bearing upon points raised in this paper, I herewith submit reports of three cases besides the one which occurred in my own practice.

CASE I.—Referred to in "Tillman's Surgery," page 14. Injury to the gall duct. Five punctures made in twenty-nine days, drawing off twenty-seven litres of "bile, serum, and mucus." Healed spontaneously.

CASE II.—From "Bryant's Practice of Surgery," page 305. A man, age 29, was knocked down and the wheel of a spring dray passed over his stomach. He felt pain in the right hypochondriac region directly and "had hard work to get his breath." Abdominal pain increased and jaundice appeared, and for one month he kept his bed. On the thirtieth day after the accident, as he did not improve, he was admitted into the London Hospital under Dr. Herbert Davies and Dr. Sutton. When in the hospital he had abdominal pain, tenderness, and distension. There were distinct ascitic fluctuation over the abdomen and deep jaundice. He sank eight days after his admission, thirty-eight days after the accident. The autopsy revealed the fact that the hepatic duct was torn across a quarter of an inch above the spot where the cystic joins the common duct; no other part of the liver was injured. The abdominal cavity contained quarts of olive-green, bile-stained fluid, and the peritoneum was covered with yellow matter of the color and consistence of yellow paint, which was found to be inspissated bile.

CASE III.—A case of lesion of the gall ducts. By Dr. Kernes." A technologist, 25 years old, injured on November 2, the pole of a carriage striking him on the right side and pushing his left side against a wall. Though feeling violent pains on the right side, he felt able to go home, but had to lie down at once. He had pains in the right side and shoulder, nausea, and constipation. There was considerable swelling, which diminished somewhat, as did the pain, under water compresses. Diarrhea succeeded the constipation. Discoloration of the stools was not observed; no blood; no blood in urine. The condition of the patient gradually grew worse without any perceptible

cause; swelling increased; breathing difficult; jaundice. Temperature, 37.6° to 38° . Pulse frequent, with tolerably good tension. Appetite poor; tongue coated; urine brown, free from albumin and sugar, containing biliary coloring matter. Abdomen uniformly distended. Percussion tympanitic; dull in dependent parts. Fluctuation present. Respiration frequent and superficial. Liver and heart displaced upward.

In consequence of the increasing dyspnea and change for the worse in the pulse and general condition, puncture was resorted to and two litres of a brown fluid were evacuated, containing albumin and large quantities of biliary coloring matter. In one day he was just as much distended as before. Laparotomy was therefore resorted to.

There were removed from the abdominal cavity about three litres of brownish fluid and an enormous quantity of large blood clots. In the region close below the liver pure brown gall bubbled forth at slight pressure. Intestinal peritoneum was injected, velvet-like, with delicate and fibrous accumulations here and there. Many agglutinations of intestinal loops with one another and with the border of the liver corresponding to the gall bladder; the lower surface of the liver could not, therefore, be accurately palpated. The right lobe of the liver reached far down; a furrow was felt at the lower surface. The peritoneal cavity was wiped with sterile gauze compresses and the abdominal wound closed with silk sutures.

After the operation the belly was swollen, with marked meteorism; vomiting and constipation. General condition very weak. Pulse small and frequent, often necessitating injections of camphor-ether. An improvement took place only on the third to fourth day. First stool on the fifth day. Abdomen soft; no new discharge of fluid. Patient passed in the further progress of the sickness through a double-sided pulmonary hypostasis and a right-sided pleuritis, accompanied with high, irregular rise in temperature and requiring repeated aspirations. Complete cure after four weeks. Abdomen soft; no dullness anywhere; the liver margins in normal position.

We find here all the symptoms of a lesion of the gall ducts. This diagnosis indicated the necessity of puncture and subsequent evacuation by incision. The above proceeding was successful. Although the locality of the lesion could not be found with certainty, the secretion of gall into the abdominal cavity rapidly ceased. The patient was cured by the operation, though convalescence was very slow.

CASE IV.—I was called by Dr. Leslie, of Convoy, Ohio, to see D. P., æt. 11 years, male. The injury was produced thirty days prior to my visit by the passage across the abdomen of a wagon loaded with wheat. There was great shock, from which reaction occurred, with the use of stimulants, in eight hours. Pain was complained of in the left hypochondrium. There was vomiting, and loose stools without biliary coloring matter. Ascites was first noticed ten days after the injury. The patient was tapped by Drs. Leslie and Wright twenty-six days after the injury, one and a half inches below the umbilicus, and nine pints of "bile" drawn off. Four days after the tapping I saw him. He was much emaciated, not jaundiced, pulse 110 and feeble, temperature normal, very peevish; complaining of pain in left hypochondrium; upper half of belly distended with fluid. I opened the abdomen in the mid-line above the umbilicus and let out ten pints of dark-colored bile, which was confined in an artificial cavity formed by adhesions in front of the stomach. After the cavity was emptied the bile would well up from the region of the gall bladder to the right of the incision. Owing to the weak condition of the patient I contented myself with the introduction of two soft-rubber drains, one reaching to the right at the point from which the bile came, and the other well to the left. The wound was closed up to the tubes with silkworm gut. The patient was greatly relieved of pain by the operation, but continued to fail notwithstanding a voracious appetite. Accordingly he was brought to Hope Hospital eleven days after the operation and placed under my care. The wound was found to be healed save where the drains came through, and the stitches were removed together with the tube draining the left side of the cavity. Upon the removal of the tube there was some discharge of watery bile, and the tube was found to be plugged by what seemed to be thick pus. The temperature at this time was subnormal, pulse 100 per minute, of fair volume; emaciation extreme; stools acholic, but contained no undigested food. We now commenced the administration of inspissated ox-gall and salol, in the hope that he might gain strength enough to warrant an operation of a more radical nature; but the case continued without improvement, and death occurred rather unexpectedly on September 11, 1897, forty-eight days after the receipt of the injury.

Postmortem examination revealed a complete division of the common duct about its middle and a large sub-diaphragmatic

abscess of the left side. No trace of injury to any structures save the duct could be found. In my opinion the boy died from the combined effects of inanition and sepsis.

In conclusion I want to emphasize the following points:

1. Fatal inanition may be caused by an injury which results in a complete diversion of the bile from the intestines.

2. Jaundice may be absent though a large quantity of bile is thrown into the peritoneal cavity.

3. Cholemia and inanition combined may keep the pulse rate and temperature normal, or even below, in the presence of marked sepsis. Acting singly these conditions have the same effect, but in lesser degree.

4. Jaundice is not always present in cholemia.

I concede that the truth of this last proposition may be open to question, but the burden of proof rests with those who deny it. The other conclusions are, in my opinion, supported by evidence that is incontrovertible.

47 WEST WAYNE STREET.

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FLOATING KIDNEY.¹

BY

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NOT many years ago a dislocated kidney, or a kidney displaced from its normal site, was looked upon as a very rare condition. Now it is observed very frequently, probably due to the fact that physicians are more alert than formerly and seek after it.

In dispensary and private practice during the past three years the writer has examined thirty or more persons afflicted with a floating kidney. Complete notes were not made of all the cases that came under my observation, but, in reviewing them, I find that the subjects were all females, ranging in age from 22 to 63 years, the majority being between 30 and 40 years of age. In only one case was it the left kidney that was abnormally situated. The left kidney in that instance was not only displaced, but much enlarged, tender, and fluctuating. The majority of the women were thin and spare, not one being very fat. With one exception they were or had been married. The greater number had none or only one or two children, only three having given birth to a large number of children. Hence frequent childbearing, stated by some writers to be a common cause of floating kidney, was not corroborated by my experiences. Without exception the women had worn corsets and had suspended their skirts from the hips. Some had worked hard, others moderately, and a few had taken life easy. Two had received severe falls and dated their distress from the time the accident happened.

The degree of mobility and displacement varied considerably in the different cases. In six the kidney could be readily grasped with one hand and moved about over a considerable area, while in others it was necessary to use the two hands, one anterior and the other posterior, to detect the slightly movable and dislocated kidney. In most cases the kidney was

¹ Read before the American Association of Obstetricians and Gynecologists, at Pittsburg, Pa., September 20-22, 1898.

normal in size and shape. In three the kidney was enlarged and tender.

The symptoms varied somewhat in the different women, and the severity of the symptoms was not in proportion to the amount of displacement of the kidney. In a few disturbance of the urinary function was prominent, the kidney, as a rule, being in a healthy condition, as evidenced by the urine. Disturbances of the nervous system were marked—hysteria, hypochondriasis, backache, dragging pains in the right side, neuralgia; palpitation of heart, headache, dizziness, falling and smothering sensations were common phenomena.

Gastro-intestinal disturbances were common—nausea, vomiting, flatulence, and colic. A few suffered with violent colic with inflammatory symptoms, sensitive tumor, and localized peritonitis. A case I examined in September, 1896, was of this nature. Mrs. S., age 63 years, mother of seventeen children, had always been a hard-working woman. Previous to September 12, 1896, she had never complained of being sick, with the exception of considerable "wind in her bowels" for many years. On September 12, 1896, after a hard day's work at scrubbing and washing, she was suddenly seized with a severe colicky pain in the right iliac region and a strong bearing-down sensation. In a short time the abdomen became swollen, tympanitic, and exceedingly tender on pressure. A large mass was readily detected on the right side, extending from the twelfth rib to the ilium. On account of the great tenderness and pain it was at first difficult to diagnose the true condition; after a few days, when the swelling and tenderness had subsided, the tumor was readily recognized as an enlarged movable kidney. This kidney probably had been floating for some years, when suddenly, after a sudden straining effort, the kidney became turned, twisting on its pedicle, causing obstruction, congestion, swelling, and tenderness of that organ—the tenderness and inflammatory symptoms extending to the surrounding parts. Her urine at first was very dark in color, heavy, and scant; at my last visit it was copious, light in color, with a specific gravity of 1003, containing no albumin. The kidney gradually became smaller and more mobile.

The diagnosis in the majority of the subjects was comparatively easy. The presence of a movable kidney-shaped tumor was plainly detected in the hypochondriac region. This, in conjunction with the nervous and gastro-intestinal symptoms mentioned above, made the diagnosis evident. I have never

seen death follow as a result of floating kidney, but in some instances much suffering.

The treatment advised depended upon the age, amount of distress, and the general condition of the woman. If the patient was old and not suffering much, general tonic treatment was given, with a caution not to be alarmed, her condition not being a very serious or likely fatal one. Attention was directed to proper hygiene and diet; corsets were discarded; the skirts suspended from the shoulders; any considerable force and violent muscular effort to be avoided; the bowels were regulated. In those women who suffered sudden attacks of pain, with nausea, abdominal tenderness, and inflammatory symptoms, rest in bed, hot fomentations over the abdomen, and anodynes were prescribed until the acute symptoms subsided. In a few cases bandages, rubber pads, and elastic belts were applied, with the object of keeping the kidney in normal site and immobile; but they were of no benefit and only gave the wearer considerable additional annoyance and distress.

Those women who suffered much and whose general condition was good were advised to submit to nephrorrhaphy. I have performed this operation three times during the period given.

CASE I.—Mrs. S., age 30 years; mother of one child; instrumental delivery after a very hard labor. The right kidney considerably displaced. Ordinary methods of treatment by support had been used for many months prior to the operation, without relief. The operation was performed as follows: The patient was placed face downward upon the operating table—a large pad being placed under the abdomen to make the ilio-costal space prominent—first restoring the displaced organ. Incision through the abdominal wall made, commencing about one-half inch below the twelfth rib and extending downward and outward about three inches. The kidney, upon being exposed, was grasped with a pair of volsella forceps and brought well into view; the fibrous capsule next incised to the extent of about one and a quarter inches and dissected back one-half inch on each side of the incision. The flaps thus made were sutured to either side with buried silkworm gut to the muscles and connective tissue. The upper and lower angles of the external wound were closed and the centre packed with iodo-form gauze; wound dressed, and the patient placed in bed upon her back and kept in that position for several days;

wound packed daily and allowed to heal by granulations. Mrs. S. made a good recovery from the operation. The kidney remained firmly adherent; her pains were much relieved; the nervous symptoms were not so marked, and her general condition decidedly improved. One year after the operation the kidney still in normal position and immobile.

CASE II.—Mrs. M., a woman 59 years old; never has given birth to a child; very thin and anemic; her general condition bad, having suffered severely with a catarrhal condition of the intestines, occasionally passing large mucous casts from the bowel; nervous symptoms very prominent. The right kidney very free and mobile; it could be readily grasped with one hand and moved over considerable area. Ordinary treatment had failed to relieve; notwithstanding her age and bad condition, operation was advised. She readily consented. Operation similar to the first detailed, with the exception that the fibrous capsule of the kidney was not split nor dissected up, the kidney being made fast by passing a large-sized semicircular needle, carrying a heavy silk thread, through the substance of the kidney, passing the ends of the thread through the abdominal walls, one on either side of the middle of the incision; only one suture was passed in this manner. The capsule being next roughened slightly, the ends of the heavy thread were tied down, thereby bringing the kidney well up to the abdominal wall and closing the incision at its middle; a small iodoform gauze drain introduced and the external wound closed and dressed. The large silk thread anchoring the kidney was allowed to remain three weeks. Mrs. M. recovered nicely and rapidly from the operation, suffering no pain or distress while in bed. At last report—a few months ago—the kidney remains fast and in good position, and her general condition is very much improved.

CASE III.—Mrs. B., age 23 years, no children. Had suffered long with flatulence and nausea; very nervous and hysterical. Operation performed in same manner as in second case stated. Results altogether satisfactory. This patient now feels entirely well.

I regard the method of anchoring applied in the second and third cases stated as much superior to that adopted in the first. It is simple, takes less time to perform, and gives better results.

GASTRO-ENTEROSTOMY BY A MODIFIED VON HACKER
METHOD.¹

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THE present contribution cannot be dignified with the title of an "original paper." To present a paper with something new, in a field that is being worked over with such unabating vigilance by the brightest minds and most indefatigable workers in our profession, is an undertaking that, with my humble ability and limited time, becomes an impossibility. With your indulgence I beg leave to report the following case, the only virtue of which is to add to a literature that is at the present time receiving a good deal of attention from abdominal surgeons.

J. K., age 52 years, admitted to South Side Hospital July 7, 1898. Native of Hungary. Resident of United States for eight years. Father died at the age of 65 years; does not know cause of death. Mother died during childbirth at the age of 45 years. No history of cancer in family; denies specific disease. Patient has had nearly all of the diseases peculiar to childhood. From childhood until five years ago was never ill, at which time he was said to have some lung trouble, which lasted for four weeks. Since that illness he has never been well. About one year ago he began to complain of a burning in the stomach, accompanied with flatulence and fetid breath. Six months ago patient began to have actual pain in the region of the stomach, the pain radiating toward the back. Three months ago vomiting began, this continuing up to the present time, with great regularity, three or four hours after meals. Vomited matter was of a dark color. Never noticed blood in the ejected material. Bowels have not moved for two weeks.

On examination the patient is emaciated to the last degree; he is anemic and the skin has a grayish tinge. The stomach can be outlined with ease; this is owing to the fact that it is distended with food, while the intestines below are collapsed,

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with absence of fat in the abdominal walls. The patient can produce splashing sounds, whilst upon his back, by rolling from one side to the other—a feature in his case that he is particularly anxious should be observed, as he holds that nothing passes down. On palpation a small mass can be demonstrated in the pyloric region. An operation was advised some weeks ago, but was declined by the patient. The patient now asks for an operation, as he is starving. It has been observed since the patient came into the hospital that the vomitus contains small specks of blood. Hydrochloric acid absent. Urine normal to ordinary tests. Pulse 78, temperature 69°.

Operation July 10. The abdomen was opened, lavage of the stomach being first practised, by a small incision between the ensiform cartilage and umbilicus. Introduction of the fingers revealed the indurated pylorus. The opening was now enlarged, when it was possible, by retracting the abdominal walls, to inspect the pylorus. The indurated mass involved the entire circumference and appeared to completely obliterate the lumen of the gut. The lymphatics in the neighborhood were involved. Gastro-enterostomy by the Von Hacker method was immediately decided upon. The jejunum was readily found by lifting up the transverse colon and passing the hand to the left under the mesocolon in the direction of the duodenum (Socin). The mesocolon was now torn in the direction of the blood vessels. The jejunum was then brought up against the stomach; but the apposition of the jejunum and the anterior and lower portion of the stomach so naturally adapted themselves that I intuitively accepted the suggestion and made the anastomosis at this point, first making the incisions in the jejunum and stomach, and inserting the Murphy button, largest size.

The margin of the opening in the mesocolon was made fast to the stomach by a few fine silk sutures. Although the operation was done with the utmost deliberation, but forty minutes were occupied from the beginning of the operation until the patient was removed to his bed and in a very fair condition. For the first two days following the patient was nourished by the rectum, and everything looked favorable. However, the patient was losing ground, the pulse was becoming rapid and thready, with the supervention of hiccough. Food by the mouth, in the form of milk and whiskey and beef tea at intervals of two hours, was now administered, but the patient gradually became weaker and died of inanition at the end of

five days. With the operation vomiting ceased entirely, the patient calling for more food.

On opening the abdomen after death the stomach and intestines were found comparatively empty. At the point of anastomosis the coaptation was perfect. A section of the stomach and bowel, with the button *in situ*, was removed. On unscrewing the button and its removal, although slight adhesion had taken place, they were not firm enough to prevent their separation.

If the vitality of the patient had not been at such a low ebb, it is probable that the adhesions at this time would have been more firm. In the specimen which I beg leave to present for your inspection, you will observe that the peritoneal surfaces have been nicely in apposition in the entire circumference, and the opening is ample for the passage of food.

I am satisfied that if this patient had been operated upon somewhat earlier, recovery would have taken place. The patient died of starvation. An observation that might be made in this connection is the fact that before the operation the patient retained the food in his stomach always for three or four hours after meals, but apparently very little nutrition was supplied to the body, the stomach acting principally as a food receptacle rather than as a food elaborator.

The history of this operation, and the various methods, with the technique, have very recently been so elaborated by Keen and others that anything in that direction upon my part would be a labor of supererogation.

77-79 SOUTH THIRTEENTH STREET.

THE GRAVER NERVE DISTURBANCES DUE TO ORGANIC CHANGES IN THE GENITAL ORGANS.¹

BY

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I HAVE noticed a great discordance and much dissension both in the writings and discussions of the neurologist and the gynecologist, when this subject has been approached. I also

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perceive an unusual amount of activity of late on the part of the neurologist to keep open the controversy. I feel certain that we, as gynecologists, should not fail to make our position clear and tenable. I am well aware that I have nothing new to offer you either in the etiology or pathology or symptomatology of these disturbances of the nervous system, which are commonly called neurasthenia and hysteria, and are described by the neurologists as fatigue and psychic neuroses.

In looking over the literature one must take care lest he hopelessly flounders in the mass of arguments, *pro* and *con*, in the defence of some pet theory, urging a particular pathologic condition of a particular organ as the *sine qua non* in the establishment of the etiological factor. Innumerable cases are reported by the gynecologist to make his peculiar position defensible; innumerable cases are reported by the neurologist to make the former's position untenable. I do not attempt to exculpate those specialists of the past who allowed their enthusiasm to overcome their reason. I do defend those of to-day who relieve the unfortunate neurotics by the removal of *diseased* pelvic organs. I do not believe there is one member of this body who would assert that he can cure a mental *disease* or a nervous *disease* by any surgical operation, by the ablation of either a normal or a pathologic organ. I do not believe there is a gynecologist to-day who would attempt to cure a mental *disease*, or a nervous *disease*, or a mental or nervous *functional disorder* by the removal of a normal, healthy organ. There is no argument in the statement that "it would be just as sensible to claim a cure by trimming the toenails as to claim a cure from pelvic operation." It even fails in sarcasm because of its lack of analogy and faulty logic. I have only to remind you of the existence of the great sympathetic nervous system to show the lack of similarity.

H. C. Wood calls neurasthenia a "nervous weakness, an habitual foundation for hysteria, chorea, insanity, and various nervous diseases." Furthermore, he says: "The onset is always gradual, although at times the condition appears to develop with great suddenness. Under these circumstances, however, the explosion has been preceded by a long train of more or less overlooked phenomena. Hyperesthesia and anesthesia mark the line where simple neurasthenia passes into hysteria." Also: "Nervous exhaustion may in the beginning affect the whole of the nervous system, or it may be at first purely local and coexist with general nervous strength. In

cases of nervous exhaustion the efforts of the diagnostician are chiefly directed to determining the cause of the exhaustion. In a very considerable proportion of cases which have been sent to me as suffering from simple neurasthenia, chronic malaria, chronic diarrhea, Bright's disease, or other organic affections have existed." This quotation summarizes all that I found in the literature, and states concisely my own opinion, gathered from an experience of years of hard work in the practice of general medicine, supplemented by my labor in this special field. Can an ocular defect bring about a general nervous exhaustion? Can a chronic malaria, a chronic diarrhea, a Bright's disease, or any other organic affection cause neurasthenia? Dare we question so high an authority as Dr. H. C. Wood? And, lastly, why cannot a chronic organic affection of the uterus or its appendages cause nervous weakness?

Recall the fact that not so many years ago physiologists were almost ready to believe that there must exist highly specialized nerve centres or ganglia within the uterine muscles (as in the heart), in order to account for the rhythmic contractions of the organ during labor; also the fact that parturition cannot be merely a reflex act, because the pains have ceased through mental perturbation. There does exist one of the closest relations between these organs in the pelvis and the brain and cord. Is it not as reasonable to suppose a chronic affection of the uterus may cause neurasthenia as well as a chronic malaria? And can you not bring innumerable cases to bear witness to the fact? Can we then accept the neurologist's statement that all idea of operations upon the pelvic organs must be absolutely abandoned?

What is the history obtained by the gynecologist in those patients to whom he suggests operation? A dysmenorrhea of long standing and becoming more severe and less patiently borne, the nervous symptoms aggravated at each menstrual epoch, and a markedly close *synchronal* relation between the great general explosive nerve seizures and menstruation. Are such cases without a correlation? My experience has taught me to give with assurance a prognosis favorable to such a case following the correction of the pelvic difficulty. Does the dermatologist refuse to use mercury and the iodides in the manifold manifestations of eruptive skin disorders due to syphilitic infection, because the specific remedy fails when the eruption is not dependent upon the aforesaid infection? Shall we abandon operative measures for the relief of functional nerve disorder?

ders, when an unquestionable correlation exists between such disorders and organic pelvic disease, because an operation has and does fail to cure a nerve lesion? In the last five years of my work I have never operated upon a case in which the correlation between the diseased pelvic organs and the nervous symptoms was not clearly defined before an opinion from a neurologist relieved me of a doubt of a nerve or brain lesion, with one exception. This case had been confined for a number of months in an institution for the insane. She was 32 years of age, had given birth to two children, and had been well up to the time of the birth of the second child. She left her bed, after this second labor, before the end of a week and cared for her household. Shortly she began to be morose and melancholy and at times violent, attempting to destroy not only her own life but her two children also. Her general health was good, but on examining the pelvic organs I found the cervix at the introitus vaginæ, lacerated and cystic, the uterus very large and retroverted, with prolapsed, enlarged, and tender ovaries. I had her removed to my private hospital. After the usual preparation I curetted the uterus, repaired the laceration, and supported the uterus with a pessary. She showed evident signs of improvement within a very short time, and on the second day following the operation said that the sense of pressure and peculiar feeling she had had in the occipital region had disappeared. One year and a half afterward we learned that she was in perfect health, bodily and mentally, and had increased forty-five pounds in weight.

CASE II.—*Melancholia*. Mrs. B. was approaching the menopause. She was troubled with all the symptoms accompanying endometritis with retroflexion of the uterus. Upon close questioning and examination by a neurologist, no evidence could be obtained to attribute the deep melancholic condition into which she had gradually fallen. The correction of the local condition shortly restored her to her normal plane.

CASE III.—*Neurasthenia*. Miss S. was cared for in Philadelphia by an eminent neurologist for simple neurasthenia. Every known art was tried to relieve her condition. After a number of months of fruitless work an obstetrician and gynecologist of that city was asked to see the case. He advised against *any* operative interference. Six months afterward she came to my hospital. I found an enlarged, sharply retroflexed uterus, but no disease of the appendages. The uterus was curetted and held in the normal position by a pessary. She

quickly responded to the treatment, and declared herself unusually well in a short time. She has remained under my observation during the past three years and I know that she is perfectly well.

CASE IV.—*Insanity*. Miss H., age 20, gave history of severe dysmenorrhea for the last four years. For eight months prior to the time I was called to see her she had been kept under close surveillance because of several attempts at suicide having been made. Upon examination I found an enlarged, retroverted uterus and prolapsed, sclero-cystic ovaries three times the normal size. I curetted the uterus, removed the diseased appendages, and suspended the uterus. Her recovery was rapid and complete.

CASE V.—*Hystero-epilepsy*. Miss G. first menstruated at the age of 14. Two years later was injured by falling from a horse. Her next menstruation was accompanied by severe pain; this increased month by month until she became a nervous wreck. There developed in this case one of the most severe forms of hystero-epilepsy I have ever seen. She was under the care of several neurologists and in several private sanitariums for a number of years, but was finally turned over to my care. The examination showed a retrodisplaced and adherent uterus, with the appendages embedded in a large inflammatory exudate. I removed the appendages and suspended the uterus. Her improvement was very marked after the first two weeks. She gained from seventy to one hundred and twelve pounds in a few months and is now the picture of perfect health.

CASE VI.—*Hysteria*. B. L., age 18, had first menstruated at the age of 14, each period being accompanied by severe and prolonged pain. When 17 years old she began to show evidences of neurasthenia, which general treatment could not remedy. This condition rapidly developed into one of the major forms of hysteria. I examined under anesthesia and found a sharply anteflexed, retroverted uterus. The cervical canal was enlarged and filled with a puriform discharge, and a large surface of the cervix was eroded and the vaults of the vagina denuded. Both ovaries were palpable, but the left was a little enlarged and rounded. I curetted the uterus and kept it well forward by tamponing the vagina with gauze. She steadily improved in her physical and mental condition, and was dismissed in two months. She gained thirty pounds in an incredibly short time, and had no recurrence of the

hysterical seizures, but she was still a neurasthenic. She again returned to me a year afterward. I found the uterus in good condition, but the ovary appreciably larger. I advised its removal. The family would not consent. It is nearly three years now since I first saw her. She still has painful menstruations and is still a neurasthenic. The case aptly shows the natural development of hysteria based upon neurasthenia. With the relief of the acute inflammatory action the hysterical symptoms disappeared, but the slowly progressing chronic ovaritis prevents the patient from gaining her normal nervous tone.

I could multiply these cases many times from my records, but I have already said enough to warrant my proposing that we, as gynecologists, jointly make some effort to secure for the women confined in our county and State institutions for the insane such surgical measures as will, I know, in a large proportion, be a curative means for their mental ailment, and which must, in a vastly greater proportion, at least improve their condition both mentally and physically.

127 EUCLID AVENUE.

INSUFFICIENT MENSTRUATION.¹

BY

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UNDER this title I will endeavor to describe a condition to which I have seen but few references in reviews of recent gynecological literature. The number of cases observed was small, the series consisting of only six cases. The condition indicated by the title of this paper I would describe as follows: The flow appears regularly, but is in each case less in quantity and usually shorter in duration than is normal for the individual, and is accompanied and followed by flushings of the face, headaches or a feeling of fulness or giddiness in the head, lassitude, mental disquietude, depression sometimes bordering on melancholy, alternating with marked nervous irritability—just such a train of symptoms, in fact, as we would expect to

¹ Read before the American Association of Obstetricians and Gynecologists, at Pittsburg, Pa., September 20-22, 1898.

encounter if the individual were passing through the climacteric.

The cases all occurred in women between 25 and 35 years of age. All were married. All but one had borne at least one child. All were apparently in robust health. None of them were hysterical. None belonged to the class who are pleased to be subjects for frequent examinations. One description will serve for four of the cases. Examination did not reveal any ovarian or tubal disease or malposition of the uterus. There were no extensive lesions of the cervix. In two there was present a barely appreciable subinvolution, with perineal rupture so slight as not to give any inconvenience or remove in any marked degree the natural support of the pelvic organs.

In these four cases the vaginal walls were markedly relaxed, vaginal mucosa pale and dry, cervix pale, os patent, uterine canal sufficiently large to pass a large sound without any difficulty. No history of gonorrheal infection. Complete freedom from leucorrheal discharge. In one case there was a marked dilatation of the capillaries of the face.

Of the two remaining cases, one, Case 5, differed from those already described in the fact that the vaginal mucosa and cervix were not pale and the vaginal walls not so relaxed. There was a moderate degree of leucorrhea and the endometrium was not devoid of sensibility. The other, Case 6, had been infected with gonorrhea at the time of marriage, several years prior to the time at which I saw her. It had invaded the tubes and produced a localized peritonitis. In this case the vaginal mucous membrane and cervix were normal in color and there was no relaxation of vaginal walls. The ovaries had been displaced and there was a mass of plastic exudate filling the posterior and upper part of the pelvis, painful on manipulation, giving the impression of recent exacerbation.

In the four cases first described there was almost absolute lack of sensation in the endometrium. The blood supply seemed to be deficient; it would require very rough treatment to produce any bleeding from the endometrium, even when the menstrual flow was almost due. In Case 6 this condition could not be so well or safely tested on account of the existing complications.

In all six cases sexual desire was absent. The performance of their marital duties was repugnant and had always been so. One woman gave the following description of subjective symptoms about the uterus: "My general health is perfect, but

I feel as if my womb were dead within me. I have a sense of carrying about something dead, something devoid of any sensation, even at the menstrual period, except an impression that I would feel relieved if it were removed."

All these cases had passed through other hands before applying to me. All had used douches—hot, cold, and astringent. They had been packed and tamponed, and counter-irritated with iodine, etc. All but one, Case 5, had been curetted from twice up to many times twice, and from the condition of the endometrium, or cicatricial substitute for an endometrium, that some of them presented, there could be no doubting the fact that the curetting had been effectually done. In fact, all the cases but Case 5 presented themselves with a request that they be curetted, asserting strongly that no other treatment had so relieved their distressing symptoms. They claimed that it always gave relief for one month, sometimes for two months or more.

Being convinced that the benefit derived from curettement was due solely to stimulation or irritation of the glandular structures of the endometrium and of the terminal branches of the nerves therein, thus conveying an awakening impulse to the various ganglia or centres found in the uterus, tubes, etc., and which preside over the functional activity of these organs, I succeeded in inducing them to try milder measures for relief.

In Case 5, where curettement had not been practised, a few mild dilatations of the canal, followed by thorough cleansing and applications of cupric sulphate, resulted in complete cure so far as the distressing symptoms and the repugnance to the performance of marital duties were concerned. Some years have elapsed since, but I do not believe that she has conceived again.

In Case 6 inquiry developed the fact that she had been twice vigorously curetted and that each operation had been followed by a sharp attack of localized peritonitis, the last attack being about three months prior to the date of my examination. And yet her discomfort was so great that of two evils she preferred the pain of peritonitis to the discomfort of insufficient menstruation. She was placed on appropriate treatment to reduce the inflammatory action and produce absorption of the exudate; as that subsided and tenderness began to disappear, very mild dilatation was practised each month just before the period was due, with complete relief of

the usual symptoms. She is rapidly approaching a cure as perfect as can be expected in one who suffers as she has from gonorrhea and curettement.

The four cases described together varied as to the length of time they had existed: one less than three years and one for eleven years. They varied also in the frequency and severity with which they had been curetted. Constitutional treatment did no good in any of these cases. Gentle dilatation and massage shortly before the period almost invariably increased the flow in a marked degree and gave relief from the usual suffering. It also produced a slow but decided improvement in the general condition, the intervals at which this stimulation was found necessary becoming greater and greater as months passed by. Three of them, I have reason to believe, are cured. The fourth case, the one that has been most frequently and most severely curetted, can always be relieved, but there does not seem to be much tendency to permanent recovery.

This case accidentally developed a fact which may prove the title of this paper to be incorrect. For economical reasons she tested to the utmost the length of time that treatment would afford relief. If practised just before the menstrual period the flow would be markedly increased; the distressing symptoms would be wanting for a month, and sometimes longer. On this account she would not appear regularly for treatment, but would wait until literally forced by her condition to apply. She was as liable to apply for treatment ten days or two weeks after the period as two or three days before. It mattered not, however, for in from thirty-six to forty-eight hours after treatment, even midway between the periods, all the symptoms would disappear, of course without any flow. The only reference that I have seen in recent reviews to conditions approaching those I have described is from the pen of A. W. Johnstone, of Cincinnati.¹ In this article he refers to the discovery by Stephenson, of Aberdeen, of a blood-pressure cycle in the pelvic organs, on which menstruation seemed to be dependent. The pressure, he claims, is greatest at the onset of the flow, least at the period of cessation, remaining low for seventeen days and then beginning to rise.

Disturbance of the cycle, he claims, produces headache, nausea, vertigo, convulsions, glycosuria, by an increased pressure in the floor of the fourth ventricle, with resultant pneumogastric inhibition and hepatic torpor. If the pressure in the

¹ AMERICAN JOURNAL OF OBSTETRICS, May, 1895.

pelvic organs fails to reach the normal there will be no flow, but nervous manifestations and anemia. If the pressure be normal and the flow be interfered with by disease or injury of the endometrium, there will result congestion of these organs and vicarious menstruation.

Whilst there is some similarity between the conditions I have described and the symptoms here detailed as resulting from disturbance of this pressure cycle, the points of dissimilarity are more numerous than those in which they agree. The treatment on which I have relied was outlined by Braithwaite in 1887 when he resorted to intrauterine stems and strands of thread.

From the history of these cases I believe that I am justified in drawing the following conclusions:

1. They appear to be due to a lack of proper functional activity of the glandular structures of the uterus and adnexa.

2. Anything that will stimulate the functional activity of these glandular structures will increase the menstrual flow and give more or less marked relief.

3. Direct stimulation of the endometrium and muscular structures of the uterus, by stimulating the terminal nerve filaments and conveying an awakening impulse to the ganglia in the uterus and adnexa, is the surest means of relief.

4. This stimulation should be only such as is necessary to give relief to symptoms.

5. Unless there be something in the uterus requiring removal, a sharp curette should never be used.

6. The difficulty of effecting a cure increases in direct ratio with the amount of injury done to the endometrium.

7. (Judging from one case.) Stimulation such as described will relieve symptoms at any time between periods without producing at the same time any flow of blood.

8. If conclusion 7 should prove true in a series of cases, we would be justified in believing that the amount of the menstrual flow is in itself of no particular moment, except in so far as it indicates a normal functional activity of the glandular structures of the reproductive organs.

9. If the symptoms enumerated and the suffering endured by subjects of insufficient menstruation are due to insufficient functional activity of glandular structures rather than to an insufficient flow of blood, is there not at least a strong probability that they are the result of a form of toxemia?

THE REMOVAL OF THE CECUM.¹

BY

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REMOVAL of the cecum is sufficiently rare, so that every case is interesting and should be reported in order to clear up all moot questions connected with the technique of the operation and the morbid conditions requiring and justifying the operation.

It is not necessary to burden you with a recital of a long list of authors and cases; two years ago a list showed 33 cases operated upon with a mortality of 48 per cent; this included many fecal fistulæ of a tuberculous nature which required difficult and complicated operation on the intestines. With our increased power of diagnosing cases early which need an operation, and also with the bolder surgery of performing exploratory celiotomy for diagnostic purposes only, we to-day will be able to show a better record.

My case briefly is as follows: Mr. A. E. H., age 55, a veteran of the war of the late rebellion, was in good health all these years except for occasional attacks of rheumatism. In February this year he was taken with pain and distress in the abdomen; some days he would have a sharp attack of colic and the next day be free from it, but there was no regularity of the attack. Neither exercise nor variety in diet had any effect on the attack; it would sometimes occur at night and awake him from sleep. In the course of two months the attacks became very severe; he would vomit and show symptoms of obstruction of the bowels. The latter were moved with great difficulty and required the use of strong cathartics or enemata. In the beginning of May the attacks would come on suddenly with *excruciating pain*, so that he would be doubled up and could only be relieved by hypodermatic injections of half a grain of morphine. The attacks simulated those produced by gall stones. His eyeballs were yellow, skin tawny, and certainly gall stones could be suspected. The pain was generally around

¹ Read before the American Association of Obstetricians and Gynecologists, at Pittsburg, Pa., September 20-22, 1898.

the umbilicus, a little more to the right, about over the region of the gall ducts. These attacks increased in frequency; sometimes he would have several a day. Inability to retain food became more marked and his bowels were completely obstructed. When I saw him, June 8, he had not retained any nourishment longer than half an hour at a time for two weeks, nor had his bowels moved during that time.

Examination.—He was a tall man, greatly emaciated; general condition good except the soreness in the abdomen. Percussion and palpation gave no clue, which was caused, I think, by a rigid condition of the rectus muscles; certainly there was no swelling or tumor of any kind.

I did not make a diagnosis, simply that there was obstruction of the bowels somewhere, complicated perhaps by gall stones or renal calculi. I agreed to do an exploratory celiotomy and do whatever I could to *relieve the condition*, or, if it was beyond help, to close the abdomen. He was prepared as usual, and on June 9, 9 A.M., I proceeded to operate, the patient being under the influence of chloroform.

I made an incision at the outer edge of the right rectus and over the usual location of the gall duct. The abdomen open, I introduced my finger, exploring the gall bladder and duct; found everything normal; reached down to the kidney and found no stones or any abnormal condition there; explored downward to the region of the cecum and found some swelling and abnormal condition. This evidently was the seat of the trouble, and I increased my abdominal incision downward two and a half inches, making it altogether three and a half inches long.

With retractors the region of the cecum could now be thoroughly exposed, and the following condition was found: The small intestine at its junction with the cecum was of ordinary size, but above it for eight inches was dilated and immensely hypertrophied and about the size of the transverse colon. I inverted it with my finger and tried to push it through the ileocecal valve, and there I found the obstruction. The opening had been reduced to the size of a lead pencil, and to overcome the obstruction Nature had kindly produced a compensatory hypertrophy, and the terrible pain was caused by the occasional efforts to empty the ileum. The cecum was adherent, but could be easily loosened; the appendix was lying along its side and adherent to it.

The only thing I could possibly do, it seemed to me, was to

remove the whole cecum and hypertrophied ileum. There was not much difficulty in ligating in sections the mesenteric attachments and removing the whole mass, that is, about nine inches of the small intestine, the whole cecum, and about two inches of the ascending colon; my object being to remove everything that seemed diseased, as the condition might be malignant. The small intestine was then joined to the ascending colon by the aid of a Murphy button in the usual manner; the toilet of the peritoneum was quickly made and the abdominal incision closed with silkworm-gut sutures, placed by the method of Kehrer, the so-called figure-of-eight interrupted ligatures. The whole operation complete took seventy minutes. The patient quickly recovered from the anesthetic and was nourished with beef peptonoid per rectum; nothing was allowed by mouth at first on account of the constant vomiting he had had. On the third day, however, he was given a little tea, coffee, and broths, but he developed such a voracious appetite that he was allowed the so-called soft diet, and by the tenth day he was allowed solid food—in fact, he seemed to eat all day and was always hungry. The tenth day the ligatures were removed and he was allowed to get up, and in two weeks he went home. He has continued to improve, although his appetite has lessened, and a few days ago I heard that he was quite well. The Murphy button was never found. I did not expect to see it before he left the hospital, and instructed him carefully to be on the lookout for it, but he claims that he did not find it. This has happened to me on several other occasions.

Am sorry to say the microscopic examination showed the enlargement or growth to be sarcoma, consequently we can expect its occurrence sooner or later. In the meantime, however, he is made comfortable and his life is prolonged.

620 WOODWARD AVENUE.

VAGINAL SECTION.¹

BY

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IN our earthly endeavors the *ideal* should be what we strive for. To accomplish our purpose in the easiest and best manner

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to all concerned should be our plan. Surgery aims to save life and body. Should we in our practice of surgery find a measure which would add to its renown, we must not overlook it. In the treatment of the contents of the female pelvis by drainage or removal, vaginal section seems to be the ideal method. When we read of hundreds of cases that have been so treated successfully with such a surprisingly low mortality; when we see patients suffering from tender and adherent cicatrices in the abdominal wall; when we see stitch abscesses, ventral herniæ, and all the other troublesome sequelæ to abdominal section, should we not hail with delight a method that avoids all such troubles? We oftentimes see patients suffering from diseased appendages and deferring the operation of abdominal section on account of its troublesome sequelæ, only to submit to the operation after the symptoms have become unbearable and their condition very grave.

Vaginal section, which involves little or no risk, compels no prolonged confinement to bed, and is followed by no unsightly scar, at once appeals to the patient as well as the physician. After seeing abdominal section for diseased pelvic conditions, with its high mortality, it is as finding an oasis in the desert to revert to vaginal section with its many advantages. In such conditions as enlarged, tender, or prolapsed and degenerated ovaries, and accumulations in the tubes, small cysts of the ovary, and small subperitoneal fibroids—conditions which are always progressive and are relieved only by operation—their removal through the vagina is a simple matter and involves practically no risk. Vaginal section is advantageous in these cases, for it can be undertaken before the condition has assumed any gravity, and the patient is thus saved from much suffering or perhaps death. Radical methods should not be advocated where milder means would effect a cure; but in incurable conditions early operation should be advocated, because under such circumstances delayed operation causes prolonged suffering to the patient and perhaps greater risk of her life on account of developing complications.

Technique of the Operation.—The vulva is shaved and scrubbed with green soap, as is also the vagina, and thoroughly irrigated with a 1 : 5000 bichloride solution. The patient is put in the Simon position and the perineum is retracted by a broad, self-retaining speculum. The cervix is dilated and the cavity of the uterus curetted, irrigated, and packed with iodoform gauze. The posterior lip of the cervix is now seized with a

curved tenaculum forceps and drawn downward to the vulva and up against the pubes. An incision from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches in length, or longer if necessary, is made through the vaginal wall posterior to the cervix and extending through to the cellular tissue. This incision can be made with a knife, a blunt-pointed scissors, or with a Paquelin cautery knife. Then, with the ends of the first two fingers of your hand, or with the blunt end of the closed scissors, the tissues are pushed back until the fold of peritoneum of Douglas' pouch is seen. This then is opened by any of the above-named instruments, and the opening enlarged sufficiently to permit the introduction of two fingers. When the cautery knife is used we have little or no hemorrhage. When the knife or scissors is used the posterior cut margin of the peritoneum of Douglas' pouch is then sutured to the posterior margin of the vaginal wall at the incision by means of a continuous catgut suture, which controls all hemorrhage from the small vessels severed at this point. One or two fingers are now inserted into the peritoneal cavity, after the speculum has been removed to give more room to the hand of the operator. Saline solution is now the irrigant. The diseased structures, tube or ovary, are freed from adhesions by the fingers and drawn down into the vagina through the incision as far as possible. If it is an enlarged ovary, its pedicle or its attachment to the broad ligament is transfixed with a double ligature of kangaroo tendon or chromicized catgut by means of a Cleveland suture-carrier and tied in the usual manner. It is then cut off, the stump touched with pure carbolic acid or the Paquelin cautery and returned to the peritoneal cavity. If it is a pus tube, care must be exercised to prevent rupture while separating the adhesions. It is better, if possible, to remove it intact, but rupture after it is down in the vagina need create no apprehension. The pus can drain out and escape from the vagina along the groove of the speculum, and it can be washed away with bichloride solution to prevent soiling or infection of the adjoining parts. When tied and cut off the stump is cauterized and returned to the peritoneal cavity.

Should the intestines prolapse into the incision and obstruct the field of operation, they are pushed back and held up by inserting a small pad of sterilized gauze with string attached for its subsequent removal. The intestines usually do not interfere with the operation and remain unexposed and free from manipulation. Extrauterine pregnancy is adapted for

this method of operation, except when it is ruptured and complicated by inflammation. In operating for small subperitoneal fibroid the peritoneal cavity is entered either posteriorly or anteriorly to the uterus, according to its location. In entering the peritoneal cavity between the uterus and the bladder, the bladder must be avoided, and it is necessary to hug the uterus very closely when dissecting the bladder from it. As soon as the peritoneal cavity is opened the tumor is brought into view in the vaginal incision, and by means of a double -shaped incision with the knife or scissors deep into the uterine tissue, it is removed. A Lembert suture of fine catgut is used in closing the uterine wound, and all hemorrhage is controlled.

Closure of the vaginal wound will depend largely upon the necessity of subsequent drainage and upon what instrument was used in making the incision. If the cautery is used the wound is always left open and packed with iodoform gauze. Under other conditions, when it is necessary to drain, iodoform gauze in strips is packed up against the returned stump in the peritoneal cavity, the ends of the strips protruding into the vagina. The vagina is then packed with sterile gauze. The gauze in the vagina and part of the gauze in the peritoneal cavity are removed at the end of twenty-four hours, and all is removed at the end of forty-eight hours. If no further drainage is necessary the vaginal wound is permitted to heal. Healing usually takes place in from six to eight days, and the patient can be allowed out of bed in from ten days to two weeks. The gauze packed up against the stump prevents its adhesion to the intestines, acts as a slight pressure hemostat if necessary, and secures drainage of the peritoneal cavity. When drainage is not necessary and the vaginal wound is made with a knife or scissors, the wound is closed by a continuous catgut suture and the vagina packed with iodoform gauze, which is removed in forty-eight hours. For diagnostic purposes vaginal section is frequently performed with the Paquelin cautery with no apparent shock to the patient.

CASE I.—Mrs. M., age 24, married; had two children and two miscarriages. Family history negative. Complained of pain in both ovaries for six months. Had a chronic vaginal discharge. Pain at times would confine patient to bed. Entered hospital with a temperature of 101° and pulse of 92. Had violent pains in lower part of abdomen on both sides. Examination showed both tubes and ovaries very tender and

enlarged. There also seemed to be a collection of fluid on left side. Diagnosis: Double salpingitis and abscess on left side.

Vaginal section was performed and an abscess was found on the left side that discharged quite freely. Both tubes and ovaries were hopelessly diseased and were removed. Opening in the peritoneum was packed with iodoform gauze, and likewise the vagina. Temperature after the operation 100° , pulse 92. Gauze partly removed in twenty-four hours and balance removed in forty-eight hours, followed by saline douches twice a day. Patient's temperature and pulse became natural on the third day after the operation and she made an uneventful recovery. The vaginal wound was healed in ten days. Patient was out of bed on the twelfth day.

CASE II.—Mrs. T., age 54; married. Had three children, all full-grown now. Family history negative. Had complained of pain in the region of both ovaries for the past fifteen years, which grew better and worse at times. Menopause at 44. Has been a chronic invalid for the past five years, unable to do anything. Entered the hospital with a normal temperature and pulse. Examination under ether showed both ovaries enlarged.

Vaginal section was performed and both ovaries were found to be cystic, about twice the natural size, and filled with small cysts the size of a pea or bean. Both ovaries were removed and peritoneal wound and vagina packed with gauze. The usual after-treatment was pursued. Patient's temperature never reached 100° , and she was out of bed in ten days.

CASE III.—Miss B., age 22; single. Family history negative. Has complained for the past three years of pain in the right and left ovarian region. Pains not constant, but at times unbearable. Patient entered hospital with a normal temperature and pulse. Examination under ether revealed both ovaries somewhat enlarged. No discharge. Diagnosis: Cystic ovaries.

Vaginal section showed both ovaries cystic, which were removed and wound packed with gauze. After-treatment was as usual. Patient made a rapid recovery and left the hospital in two weeks.

I have performed vaginal section in twenty cases for different pelvic diseases and have had excellent results and no deaths.

Large tumors can be removed by vaginal section and the patient is out of bed in two weeks. It is often with difficulty

you can keep the patient in bed that long, as she feels so well much sooner—in fact, at the end of the first week. A most commendable feature of the operation is the presence of little or no subsequent shock.

Vaginal drainage of pus and blood accumulations in the pelvis is growing in favor with the best operators and is a most important conservative measure. The vagina is the most natural drain, and in most cases where pus is formed it is walled off by adhesions and the inflammatory exudate from the peritoneal cavity, and invasion and infection are avoided by vaginal section. This is also true of blood accumulations after they have stood some time. The appendages many times recover after vaginal drainage, and in this case vaginal section is a conservative measure.

In connection with this subject it is wrong to think that vaginal section will supersede abdominal section entirely. Both have a place in surgery and have their natural limitations, based upon several conditions—viz.: 1. The ease with which the operation can be done. 2. The danger of the operation. 3. The complications arising as the operation proceeds. 4. The necessity of drainage. 5. The immediate and remote result of the operation.

Now, to recapitulate, the advantages of vaginal section are as follows—viz.:

1. Operations of not sufficient gravity for abdominal section will be done by the surgeon through the vagina with impunity.

2. A patient's consent for operation is easier to obtain, and that at an early stage of the disease.

3. Rise in temperature seldom occurs, and convalescence is, as a rule, rapid and uneventful.

4. When drainage is necessary it can best be obtained through the vagina.

5. When exploration of the pelvis is necessary for diagnosis, with no extensive disease or adhesions.

688 PREBLE AVENUE.

TREATMENT OF ENDOMETRITIS.¹

BY

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IN acute endometritis local treatment is not always required, with the exception of cases following abortion, where prompt application of local remedies will frequently save. Place your patient in bed, administer hot carbolized vaginal douches 1:100 twice a day, as hot as can be borne by the patient. Where the disease is of gonorrheal origin dilate the uterine canal and keep it open until the disease is cured. By this means we lessen the probability of the gonorrheal inflammation extending up and into the Fallopian tubes.

In acute endometritis I commence treatment by administering by the mouth tablets containing two and a half grains each of acetanilid and salol every three hours. The bowels are acted upon by giving three grains of calomel with nine grains of sodium bicarbonate. Give at one dose and follow at the end of six hours with one compound cathartic pill.

In those cases where the interglandular structure only is involved I swab the uterine cavity with a solution composed as follows:

R	Ac. carbolic.....	gr. x.
	Iodine.....	3 i.
	Spt. vin. rec.....	3 i.
M.		

Apply this to the uterine cavity for three days consecutively, packing the vagina with a borated sterilized gauze tampon. This is to be removed by attendant before administering the next douche, and another placed against the neck of the uterus. After making this application for three days, allow the uterine cavity to remain at rest, continuing the douches twice a day, afterward placing borated tampon. If we find at the end of this period that the inflammatory condition persists, make the carbolized iodine application for three consecutive days again. But, on the other hand, if upon examination we find that the general condition has improved and that the inflammation has

¹ Read before the American Association of Obstetricians and Gynecologists, at Pittsburg, Pa., September 20-22, 1898.

subsidied, we merely swab the uterine cavity with a one per cent solution of nitrate of silver. Make use of this every other day until patient is cured. During convalescence administer elixir of quiniæ, ferri et strychninæ phosphatum, two teaspoonfuls three times a day.

In cases following abortion where there is high temperature, I thoroughly curette the uterine cavity with a sharp curette and complete the operation by cleaning the organ by means of a flushing curette. I do not follow the teaching of many gynecologists by introducing a gauze drain, but have found that the best results are obtained by swabbing the uterine canal with pure carbolic acid after the curettement, and this also keeps the canal open. In these cases the uterine canal should be flushed with hot carbolized water 1 : 100 every day by means of a flushing curette. One application of the pure carbolic acid will generally suffice. Afterward we apply Churchill's solution of iodine to the uterine cavity according to indications.

In chronic endometritis the treatment is different. In the first place, if we have a case where the glandular structure is affected and the uterine cavity is filled with uterine fungosities, the rational method of treatment is to thoroughly dilate the uterine canal, then curette, scraping the mucous membrane so that all growths may be removed and the ends of the closed utricular glands be opened. The flushing curette should be used to complete this operation, and a thin strip of iodoform gauze inserted up to the fundus of the uterus, allowing it to extend down until it emerges between the lips of the vulva. Remove this strip at the end of twenty-four hours and administer a hot carbolized douche 1 : 100. The following day clean out the uterine canal by means of the flushing curette, but do not introduce any gauze. Apply a sterilized borated gauze tampon. This remains until the next douche is administered, when it is withdrawn and another placed by the attendant. I make it a rule to blow an antiseptic powder against the cervix previous to introducing the tampon. I sometimes use markasol, at other times Senn's antiseptic powder, composed of one part of salicylic acid and four parts of boracic acid. By the mouth I use the following formula:

R	Fl. ext. ergotæ.....	3	xii.
	Vin. ferri amar	ad	§ xii.
S. Tablespoonful after each meal.			

There is usually a lack of tone in the lower bowels. To overcome this condition I give this pill:

R	Aloini.....	gr. $\frac{1}{5}$
	Ext. belladon.....	gr. $\frac{1}{8}$
	Pulv. ipecac.....	gr. $\frac{1}{15}$
	Strychninæ sulph....	gr. $\frac{1}{60}$

Administer each night.

The entire pelvic circulation should receive attention; a condition of blood stasis existing in any portion of this region will impede the cure. Should there be a uterine displacement this should receive attention. A lacerated uterine neck or perineum requires repair.

I have not been favorably impressed with the results of electrolysis in these cases. The use of the faradic current is frequently of valuable service in the treatment of the chronic form of endometritis. It stimulates contraction in the muscular structure of the uterus, thus compressing the blood vessels and overcoming the condition of blood stasis. I wrap the metal intrauterine electrode with cotton moistened in a borated solution and introduce it into the uterine cavity. The second electrode is a felt pad moistened in the same solution and placed on the abdomen over the uterus. The applications are to be made every third day, each sitting lasting about twenty minutes.

In the treatment of endometritis we do not direct our attention to merely relieving the symptoms, but seek the cause and remove it. Where we have menorrhagia or metrorrhagia, merely the application of liquor ferri chloridi or other styptics to the uterine mucosa will not cure the hemorrhage. Ergot is only a temporizing agent in these cases. Dilate the uterine canal, and with the curette remove the granular and fungoid condition which in all probability is present. We have an unnatural condition present in the mucous membrane. It has lost its normal constituents and has been converted, in whole or part, into dense connective tissue, so that if the woman does become pregnant the ovum fails to secure lodgment upon its surface; thus it drops lower and lower into the uterine cavity and is finally discharged. In this way we can account for the sterility which exists in many of these cases. Should the ovum remain in the uterus for a time and become impregnated, it is likely to be expelled during the early months of pregnancy.

Metritis is the common accompaniment of this disease. The secretion of the utricular glands becomes greatly increased in

quantity and altered in character, finally becoming purulent and often containing blood. On account of the intimate relation of the lining of the uterus with the muscular structure of the organ, we have an inflammation existing in the latter. Abscesses may follow and finally perforate the walls of the uterus and develop perimetritis.

I am of the opinion that we meet with cases of endometritis frequently, and cannot agree with those who claim that it is a rare affection.

5 EAST BIDDLE STREET.

DOES THE GENERAL PRACTITIONER ACCORD THAT
CONFIDENCE TO THE SURGICAL TREATMENT
OF UTERINE FIBROIDS WHICH OUR
PRESENT SUCCESS JUSTIFIES? ¹

BY

A. VANDER VEER, M.D.,
Albany, N. Y.

It has been well said that "the first step in presenting a subject is to define exactly and exhaustively the thing to be discussed." The uterine fibroid referred to is the usual submucous, interstitial, or subperitoneal one, which, from its location, produces obstruction of the bowels, irritation of the bladder, exhaustive hemorrhages, and pain; growing rapidly, irrespective of the age of the patient; and finally becoming, in some one of its many complications, a menace to life or a source of invalidism.

The general practitioner has well in hand all that pertains to the diagnosis and treatment of ovarian cysts. Smaller hospitals and bold operators in small villages do not hesitate to reach these cases early, and it is a well-observed fact that we now seldom see a large ovarian cyst. But with the general practitioner there is a tendency to procrastinate in the direction of operative interference in uterine fibroids, until many cases come to us so anemic, so exsanguinated, with rapid pulse and frightened heart, that a very large percentage of the chances the patient once had has been lost. Many general practitioners have learned thoroughly well that to try and

¹ Read before the American Association of Obstetricians and Gynecologists, at Pittsburg, Pa., September 20-22, 1898.

encourage these patients to hold out until the menopause has passed, when the tumor will disappear, is giving hope to only a very small percentage; that carefully prepared statistics demonstrate a great tendency for these uterine fibroids to become more irritable, to exhaust the strength of the patient at the climacteric, and that they are therefore dangerous when allowed to go on in this way.

Again, many general practitioners have learned by careful observation that the great hope held out in the use of electricity has not been realized. Aside from controlling the hemorrhage in a certain number of cases, and with a possible diminution in size in some few others, it is not a positive curative agent. Again, we have the intelligent practitioner who comes to us, having seen the successful surgical treatment of a number of these cases, and the question is asked: "What is your method of surgical interference? Do you still follow out what has been so successful a treatment in the hands of many English (Tait and others) and American surgeons, such as Joseph Price and other operators, and yet indorsed by so late a work as that of Harrison Cripps—*i.e.*, the use of the clamp and extraperitoneal treatment of the pedicle? Do you find it best to operate by the vaginal route in all cases of fibroids? Do you prefer the supravaginal hysterectomy, leaving in the cervix? Do you operate by the excellent method suggested by J. F. Baldwin, of Columbus?" Or he will state to you that he has read a valuable paper by Hall, of Cincinnati; read the discussion of the operation by Homans, of Boston, and of others, in which the silk has been known to escape after weeks or months, with continuous vaginal discharge through the cervix, in some cases producing abdominal sinuses. Do you operate by the rapid method spoken of by Kelly, of Baltimore, in one of his recent papers? Do you think it best to do what is called the panhysterectomy, removing the entire organ or organs after Doyen's method as improved and practised by Dudley P. Allen, of Cleveland, or W. B. Perry's modification of Doyen's method? Do you find that Le Bec's operation is especially suited for the removal of large fibroids, or do you find Richelot's abdominal hysterectomy preferable to all others? Or do you do the operation by enucleation of multiple uterine fibroids, as practised by William Alexander, of Liverpool? What has been the success, in the treatment of these cases, of ligation of uterine arteries, as emphasized so thoroughly by Dorsett and Martin (especially by the latter), including the nerve supply? Also,

ligation of ovarian vessels? What about thorough curetting of the cavity of the uterus—is it really a curative and satisfactory operation? To what extent are we justified in attempting, and how much benefit actually results from, lifting up of the fibroid and the introduction of a pessary as a support? Does the operation of salpingo-oöphorectomy receive the indorsement of the operating surgeon of to-day? What is the real difference between the old operation of enucleation through the normal outlet of the uterus and vagina, as practised by the use of Thomas' spoon saw—an instrument you once gave so hearty an indorsement—and that of traction and morcellement, so earnestly spoken of by French surgeons within the past few years and receiving the recommendation of some American surgeons? Do subperitoneal fibroids require removal of the entire uterus, and really to what extent is the operation of myomectomy practised at the present time? What has been your success with Baer's method, and do you find it necessary to employ the great number of instruments made use of by Eastman in his operation, which antedates many of the present methods? Is the operation of incision through Douglas' cul-de-sac, reaching the posterior wall of the uterus, and enucleation of the uterine fibroid or fibroids out through the vagina, proving a success in any number of cases?

These and many, many more questions are being asked by a large number of very intelligent general practitioners, who have the welfare of their patients well in hand, and who are thoroughly conscientious in endeavoring to learn, by study of their text books and reading of medical journals, as to what is the best operation.

Who of us who are present this evening fail to call to mind the conversation with our well-meaning physician? We have met him on the train, possibly in the drawing room; or he comes directly to your office, desiring an interview with you, giving the history of his case, showing a great wish and desire to be told, if possible, just your successful method of operating. Then, possibly, if time permits, you will have the question of medication brought before you, and he will ask, "Have you seen good resulting from the intrauterine injections of sterilized glycerin, or have you seen any good follow the administration of thyroid extract?" "What about the use of ergot or its many preparations?" He may say: "I have tried this remedy or that remedy, and am I justified in doing anything more from the standpoint of medication?" The question of diet will

be touched upon; change of climate; change in occupation of the patient; in fact, when you have spent an hour—and truth compels me to say, pleasantly—in discussing the treatment of the particular case in hand, you cannot but frankly admit that really the treatment of uterine fibroid, as studied from the standpoint of the family physician, is not yet thoroughly settled. You may say to him that no drug has yet been discovered that has had any influence upon the growth of uterine fibroids—perhaps a sweeping assertion on your part, yet to be found as a statement in some of our very recently published text books. He will answer by saying that “he has seen ergot do good in arresting the growth, carrying his patient along through the menopause, that then the growth did diminish, his patient is still living, getting better and better in health and strength each year”; but when you ask him as to any number of such cases he is willing to admit that in quite an extensive family practice he has never known of more than one or two. He is also equally frank in stating he has seen cases in which this treatment was carried out to the extent that no possible chance was left the patient for any operation. The treatment by electricity still demands attention from the general practitioner. You may tell him how popular this once was with some physicians, but, as stated by Penrose, “it has not stood the test of time and experience.” “It does not stay the growth of the tumor, it has caused many deaths,” and you are most emphatic in saying that from your personal experience you have seen it produce peritoneal adhesions which have rendered subsequent operations most difficult. Still he will point to cases that he believes have been successfully treated, and he will also state that he has seen many patients get better under this treatment.

The subject of diet is one you will not ignore. You will grant him all he claims, even the claims of some of the most ultra-medical attendants in their insistence upon a certain course of diet, and yet feel you have done the patient justice in that direction.

However, the subject of surgical interference is now the important factor, and it seems to me that further attention, further experience in the surgical treatment of uterine fibroids is called for. As operating surgeons, as specialists in this field of work, we must concentrate, we must co-ordinate and bring together in a happier combination, different methods that are now being made use of by a great variety of operators. I

may say to our intelligent general practitioner that my own particular method, one that I have now followed out for a number of years and which has brought me good results, is supravaginal hysterectomy; in all cases preserving the cervix and vault of the vagina if possible, removing the adnexa and using silk to ligate the ovarian and uterine arteries, bringing together the peritoneal surface of the broad ligament with very fine silk, covering the stump of the uterus with peritoneum, being exceedingly sure that the drainage outward through the remaining portion of the cervix is thorough. Notwithstanding the discharge has kept up in some cases, and the silk loops have come away, as spoken of by Hall and Homans, yet I like this way of operating and feel disposed to adhere to it, making such improvements as I believe are now indicated by the experience of other operators, with slight modifications one way or another. At the same time I must explain to this practitioner that upon opening the peritoneal cavity I may find the case one in which the combined vaginal route or panhysterectomy is the proper way; I answer him in one sentence, my time having been absorbed, the minute having arrived for the train to depart, and say: "We must be prepared perhaps to do any one of the operations spoken of." There are complications in all cases, and it is possible this particular case will require some different operation from that the majority of cases in my hands have called for. However, later on we meet this practitioner again, and he earnestly inquires: "Is there any feeling now on the part of surgeons in doing the operation, or some one of the operations (panhysterectomy, vaginal enucleation, etc.), to leaving behind the healthy adnexa—one or both ovaries, for instance, or healthy tubes?" "Is it not a fact that adopting this method has left the patient with fewer of the nerve symptoms connected with the artificial menopause that has been brought about by many of the very radical operations of the past?" Right here I am led to emphasize that in doing supravaginal hysterectomy, particularly if his patient has suffered much pain and a small growth has increased quite rapidly in one side of the pelvis or the other, we are almost sure to find diseased ovaries, cystic or otherwise. Yet, with our present knowledge of other cases in which we have had a serious train of nerve symptoms following removal of what were really healthy ovaries and tubes in connection with the fibroid or fibroids, we must lend an ear and consider this inquiry, believing it is safe and wise to leave behind these healthy organs. I am bound to say

that as the result of this consultation with the patient's physician the reply will be emphasized "that no operation will fit every case, no one line of medical treatment will answer any better," and, finally, "the great majority of fibroids do demand an early and prompt operation."

28 EAGLE STREET.

CORRESPONDENCE.

GARCEAU'S CYSTOSCOPE.

TO THE EDITOR OF THE AMERICAN JOURNAL OF OBSTETRICS, ETC.

DEAR DOCTOR:—Will you kindly say in your Correspondence that I desire to correct an error in my book ("Operative Gynecology") at the top of page 278, volume i., where I credit Dr. Burrage with a new cystoscope with an evacuating attachment; I should have given the credit to Dr. Edgar Garceau, of Boston. The description of his ingenious instrument which lies upon the table before me is to be found in the *Boston Medical and Surgical Journal* of October 31, 1895.

Sincerely yours,

HOWARD A. KELLY.

OCTOBER 13, 1898.

TRANSACTIONS OF THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

ABSTRACT OF THE PROCEEDINGS OF THE ELEVENTH ANNUAL MEETING,
HELD AT PITTSBURG, PA., SEPTEMBER 20, 21, AND 22, 1898.

The President, CHARLES A. L. REED, M.D., of Cincinnati,
Ohio, *in the Chair*.

First Day—Morning Session.

The Association met in the assembly hall of the Monongahela House, and after the transaction of some preliminary business, including

ADDRESSES OF WELCOME

by DR. JOHN MILTON DUFF on behalf of the medical profession of Pittsburg, and by LIEUTENANT-GOVERNOR WALTER LYON for the State of Pennsylvania and the city of Pittsburg,

and a response to the same by the PRESIDENT, the reading of papers was begun.

DR. FREDERICK BLUME, of Pittsburg, Pa., read a paper entitled

SOME OF THE COMPLICATIONS FOLLOWING VAGINAL HYSTERO-SALPINGO-OÖPHORECTOMY IN PELVIC SUPPURATION, WITH
REMARKS ON THE OBJECTIONS TO THIS OPERATION.¹

DR. JOSEPH PRICE, of Philadelphia, said that Dr. Blume had given a most interesting presentation of the subject. Too many operators were thinking about their suprapubic results, and many were attached to and grounded in that route.

With reference to the condition of the sexual organs following operative procedures, Dr. Price said that in a series of seven Porro operations nearly all, if not all, were sterile because pathological conditions existed unfavorable to conception. In two or three instances the women had been married ten or eleven years, and, while he did not look into the sexual history of these women, there were no complaints made regarding this point since the Porro operation. These women lived with their husbands, were happy, thrifty, and rosy. In those cases in which he inquired into their sexual lives he had always been informed that operative interference improved rather than impaired the sexual appetite. After supravaginal hysterectomies it is the rarest thing for women to complain with regard to their sexual function. In discussing the nervous phenomena incident to a normal or precipitate menopause, age must be considered. Take the so-called neurasthenic woman who has been six months or a year in a rest-cure establishment or sanitarium, or has spent a winter in France or Los Angeles, and we have a woman in whom the appendages are fixed; we have an old occlusion with retention of pus or water; the woman has probably had a miscarriage ten or twelve years ago, and we have a patient in whom nervous phenomena are well marked. Operations near the normal menopause are thrice less marked than in that group of cases. A great many operators are doing unfinished and incomplete work by the vaginal route. The vaginal route favored bowel obstruction. Coe, in an early report of ten vaginal hysterectomies, reported two cases with death from intestinal obstruction.

DR. EDWIN RICKETTS, of Cincinnati, said he knew of no diagnosis that covered so large a field as pus in the pelvis. It is the differentiation in these cases that should be emphasized. He advocates the vaginal route in nearly all cases, it makes no difference where the pus may be.

DR. RUFUS B. HALL, of Cincinnati, commended the essayist. He is not willing to assert as yet that he will attack all of these cases that have pus by the vaginal route, but he is willing to admit that there are cases coming under observation where he

¹ See original article, p. 657.

believes vaginal section and drainage is a life-saving operation, and personally he is inclined to limit the operative procedure to those few cases. The essayist cited one or two cases that were transferred to the medical ward with a temperature of 105° ; they were treated for a week or more as cases of typhoid fever. Before entering the hospital these patients were undoubtedly septic and had large accumulations of pus. These patients, in the opinion of Dr. Hall, might have recovered from vaginal section with drainage, simply resorting to a life-saving operation. Perhaps it would not be necessary to do a hysterectomy, but simply let out the pus, permit the women to recover from their septic condition, and then resort to a radical operation. He is inclined to do hysterectomy in pus cases, and if he resorts to a vaginal operation he considers it simply a temporary procedure, for the reasons advocated by the previous speakers. There were a number of cases in which the adhesions to the viscera were so extensive that good and complete work could not be done through the vagina. He could not remove an appendix for appendicitis or suppurating ovaries by the vaginal route, and do as nice an operation as he could if he opened the abdomen. He agrees with the essayist in one particular—namely, taking the cases as they come, one with another, that after hysterectomy a patient suffers less from reflex disturbances if the uterus is left, especially if the woman be young. If she is under 35 and the uterus is removed and the cervix left, if an abdominal operation is done, the patient suffers less from reflex troubles than she does if the uterus be left. This is his personal experience.

DR. CHARLES GREENE CUMSTON, of Boston, stated that suppurative conditions within the pelvis demanded different treatment, according to their situation, the number of foci present, the size and nature of these foci; and all of these pathological conditions must be considered in taking into account the choice of operation, whether the case be attacked through the vagina or the abdominal wall. He agrees with Dr. Blume that if it is necessary to do a vaginal hysterectomy it should be complete. If the tubes are full of pus, with a suppurating uterus, with evidences of infection of the tubes and ovaries, then removal of the uterus is justifiable. The uterus must necessarily be infected in such instances, as was verified by microscopic sections in all cases he had seen. If the ovaries and tubes be removed and the infected uterus left *in situ*, the patient will have trouble with the uterus later on. In most cases of pus in the pelvis, speaking in a broad way, he thinks posterior colpotomy or incision of Douglas' pouch is a very trifling conservative operation. It can be performed in chronic purulent conditions of the female pelvic organs, and also in acute suppurative conditions, where it would be dangerous to do either abdominal or vaginal hysterectomy. Great care must be exercised, when working in the vagina, to render the canal aseptic. He has performed posterior vaginal section, and in this connection he wishes to say, never puncture with a trocar,

but always with the knife, making a clean incision. Open the posterior cul-de-sac with the fingers and empty the pus. He has done this successfully in gonorrheal pelvic peritonitis and in one or two cases of abscess of the broad ligament. These patients have done well, requiring no further operative interference unless they passed into other men's hand, and he knows of no recurrences.

DR. JAMES F. W. ROSS, of Toronto, said there was one feature in connection with the discussion of this subject which should be mentioned. In speaking with Dr. Mann the other day the use of the silk ligature was referred to in the operation from above. Dr. Mann said to him that the woman with a buried infected ligature was enough to frighten a man from using silk the rest of his life. Mann instanced the case of a lady who had been operated on three or four times for the purpose of removing an infected ligature. He believes before long surgeons will cease using silk in the abdomen, and instead use catgut, thus avoiding the danger of the formation of sinuses that arise from the use of the silk ligature.

At the meeting of the British Medical Association the question of vaginal hysterectomy for cancer was discussed, and the experience of Dr. Ross coincides with that of Dr. Price—namely, that vaginal hysterectomy for cancer, no matter how early it is done, is not a satisfactory operation. The curette and cautery, or high amputation of the cervix after the method of Byrne, was satisfactory in his hands. Patients lived just as long after this less dangerous operation as they did after vaginal hysterectomy.

DR. L. H. DUNNING, of Indianapolis, wished to speak of only one or two points. In those cases described by the essayist in which he found the pus accumulations exceedingly large, extending as high as the umbilicus, fixed, and extending down into the vagina, it has been his practice for ten years to resort to vaginal section. Where a vaginal hysterectomy was done in these cases it was an impossibility, in the majority of instances, to remove the pus sac. He has tried it many times and has been compelled to abandon it. Furthermore, operations upon cases of the kind under discussion by the abdominal route were attended with a mortality of from eighteen to twenty-five per cent. Doubtless the mortality statistics of Dr. Price were much lower than that. He has operated on fifty cases, similar to those narrated by the essayist, by vaginal incision and drainage. He has had four of that number return for subsequent operation. All but one of them have made primary recoveries. He would be glad to resort to any procedure which would yield better results, but he has not been able to find any other means that would accomplish as much. In two cases abdominal section was done and a chronic abscess enucleated from above. In two other cases subsequent punctures were required, but a cure was effected under careful treatment. One of the objections to vaginal hysterectomy in pus cases was that these patients were liable to infect other

cases. In his city he is compelled to keep two rooms set aside for the purpose of subsequently treating cases of vaginal hysterectomy. These patients cannot be taken to the general ward, for if they were they would surely infect other patients. Stitch-hole abscesses appeared, and it was a matter of impossibility to avoid them. This is one of the serious drawbacks to the method, and would always remain so. Another drawback against the vaginal route was the subsequent development of abscesses one or two, or possibly four, months after the primary operation. He will not do a vaginal or supravaginal hysterectomy upon any woman under 30 years of age, unless he is compelled to do so to save life.

DR. B. SHERWOOD DUNN, of Boston, said that the septic condition of patients after a vaginal hysterectomy was one of the gravest objections to this operation. If the mortality rates of surgery are more largely dependent upon aseptic conditions than upon any other one factor, then it is certainly necessary to exclude from hospitals septic cases that endanger other inmates. At the Chicago meeting of this Association he was a pronounced advocate of vaginal hysterectomy, having then just returned from France, where it had arrived at its most excellent degree of perfection, and where it was practised by the masters of that particular operation, and had shown a mortality rate that has never been equalled by any other operation. But in the hands of surgeons at home the consensus of opinion is (and he adds his own testimony) that the perfection of technique of hysterectomy by the vagina greatly exceeds in difficulty that by the abdomen. The complications that follow this operation surpass to a great degree those by the abdominal route. The danger to the ureters, the bowel, and of post-operative hemorrhage are all very much greater by the vagina than they are by the abdominal route. Since he has had the advantage of three years' experience at home and has seen the wonderful results of abdominal surgery in his native land, he has practically abandoned vaginal hysterectomy, relegating it to a few very select cases where he is fearful of the death of his patient by a suprapubic operation. Then, furthermore, he looks upon the vaginal operation as a tentative procedure. It is a difficult operation to make complete, and in many instances it is followed by a second operation through the abdominal wall.

There is one point he thinks that has not been acknowledged by general operators in America with respect to vaginal hysterectomy, and that is, that the after-treatment of the patients is fully as important, as regards their ultimate recovery, as is the technique of the operation itself. Ségond, returning to France after a visit to this country, wrote a paper which was read before the Surgical Society of Paris, published in the *Revue de Gynécologie*, translated into many languages, entitled "The Choice of Methods of Total Hysterectomy for Fibroids, and the Superiority of the American Method over all Others." Jacobs came to this country on a missionary

tour to convert American surgeons to vaginal hysterectomy. He returned to Brussels a convert to the suprapubic operation.

DR. W. E. B. DAVIS, of Birmingham, Alabama, is of the opinion that it is necessary in many cases to operate suprapubically. This point has been thoroughly settled, as radical surgery could be accomplished by this method. He believes, however, that vaginal incision and drainage has a large field. Unquestionably all of the cases following the puerperal state where the surgeon can place his finger upon a well-defined mass behind the uterus can be dealt with better by the vaginal route. He cares not how skilful the surgeon may be, he thinks he makes a mistake when he operates suprapubically when vaginal incision and drainage, a simple procedure, and packing with gauze would bring about good results. It must be remembered that a few of the cases will come back for a subsequent operation, but gynecologists should be willing to give young women several operations, if necessary, to save important organs. These organs meant more to them than a second or third operation. It is different in dealing with women near the menopause.

DR. CHARLES A. L. REED, of Cincinnati, said he had given some thought to the alternate route in operations for suppurative conditions within the pelvis, and he has had some experience that has not been without its value, at least to himself. When these innovations come from the hands of respectable and serious operators with the results that seem to justify their serious consideration, he feels it is the duty of the Association to put them to the test of practical experience, and that has been his method with regard to the vaginal operation for pus in the pelvis. He has endeavored to deal with these cases by that route as carefully and as conscientiously as possible, and he has since been resorting to the abdominal method. His remarks at once imply that he has abandoned the vaginal route and has returned to the principle of operation by abdominal incision.

DR. J. HENRY CARSTENS, of Detroit, asked Dr. Price if he ever came across a case of pus tubes where he thought it was advisable to remove the uterus by the vagina.

DR. PRICE replied that in a case of diseased ovaries with vicious, suppurating tubes, and where he could dismiss complications of every character above the uterus and the appendages, the vaginal operation was the operation above all others and he would not hesitate to do it.

DR. BLUME, in closing the discussion, said, in reference to the remarks of Dr. Davis, that he has had no experience in making a posterior vaginal incision and evacuating pus. He has resorted to incision and drainage in two cases of large abscesses, evacuating their contents. If such tubes are incised and drained, he believes they will never functionate again.

First Day—Afternoon Session.

DR. D. TOD GILLIAM, of Columbus, O., read a paper entitled

OPERATIVE TECHNIQUE FOR INTRALIGAMENTOUS OVARIAN CYSTOMA.¹

DR. EDWARD J. ILL, of Newark, N. J., bore testimony as to the excellence of the method of Dr. Hall, as mentioned in the paper of the essayist. Very soon after hearing Dr. Hall speak of his method he saw a difficult case, and it was managed so easily that he was absolutely surprised.

DR. JOSEPH PRICE, of Philadelphia, said there are exceptionally few operators who remove cysts which they consider intraligamentous. In his experience he is slow to call them intraligamentous cysts. He is satisfied that intraligamentous troubles are malignant in nature and that the cases so commonly reported as intraligamentous are mistakes. Intraligamentous cysts are growths that develop between the leaflets of peritoneum forming the broad ligament and lift everything above it. The paper was a beautiful presentation of the subject, and the steps of the procedure as directed were of great value, but he would not like the members of the Association to feel that they could go down, tie the uterine and ovarian arteries, and shell out these cysts as one would an orange out of its skin.

DR. RUFUS B. HALL, of Cincinnati, said that fully fifty per cent of all cases of intraligamentous cysts die from hemorrhage. It is true these cases did not occur often in the experience of any one operator, and it was fair to presume that all of the fatal cases had not been reported. If we have in the method described a plan to control bleeding, why not adopt it? He believes the method suggested by the essayist is a good one.

DR. L. H. DUNNING, of Indianapolis, referred to a case which occurred in his practice three months ago, in which he had a large intraligamentous cyst to deal with, and attempted to enucleate it without adopting the method of hysterectomy referred to. He encountered alarming hemorrhage. He then remembered the method of Dr. Hall. He used sponge pressure to control hemorrhage at the time, and he began upon the opposite side to remove the uterus, according to the modified Baer method of cutting from right to left, turning it up after the plan proposed by Kelly, and as he pulled one side of the uterus up the ovarian artery came into view readily and it was tied. As he lifted that up the folds of the broad ligament spread under the tumor, and the tumor was enucleated in about two minutes without any trouble. It was large and extended above the umbilicus. He is satisfied that the patient would not have gotten off the table if he had proceeded with the enucleation from above. By enucleating the cyst from below it was taken

¹ See p. 517 of this JOURNAL for October.

out safely. The uterine artery was tied so readily that not a teaspoonful of blood was lost.

DR. GILLIAM, in closing the debate, emphasized the point that hemorrhage comes from the ovarian artery in these cases, and if it can be secured there will be no bleeding.

DR. CHARLES GREENE CUMSTON, of Boston, followed with a paper entitled

SEPTIC INFECTION OF OVARIAN CYSTOMA.¹

DR. HENRY HOWITT, of Guelph, Ontario, read a paper entitled

A SECOND PAPER ON THE SURGICAL TREATMENT OF INTUSUSCEPTION IN THE INFANT: WITH CASES.²

DR. C. A. L. REED said he had rarely been impressed by a contribution so much as he had been by this, and that the essayist should have encountered such a number of cases in the comparatively restricted community in which he practises was a matter of surprise as well as a compliment to his diagnostic ability. Doubtless many such cases were allowed to pass unrecognized; at least this was the uncomfortable thought it left in one's mind. He was impressed with the recital of the symptomatology of the cases, and he is convinced that much is to be learned by a careful study of that feature of the essayist's contribution. Another point that impressed him was, that infants were much safer candidates for surgical interference than is ordinarily supposed. The popular impression prevails with the profession that the extremes of life offer but little resistance to surgical interference, and yet his own experience in abdominal surgery in infancy and childhood impresses him that we may proceed much more confidently, regardless of the factor of age, than is ordinarily supposed. While the essayist has had some remarkably successful experiences after the lapse of considerable time, yet he is firmly convinced that this class of cases impresses upon the surgeon the importance of early and timely interference. His operative work in this class of cases is restricted to a single case, and this little patient was operated upon after nearly forty hours of stercoraceous vomiting, with the child *in extremis*, and unhappily the child died within the first five hours following the operation. But while this result was realized, it only impressed him with the importance that early interference might have had a different outcome and that delays are exceedingly dangerous. He believes the profession of this country is under a distinct and special obligation to the distinguished essayist for his contribution to the literature of this subject.

DR. W. E. B. DAVIS said it was very unusual for one man to have in his practice so many cases of invagination. He has met with only one case in his work, and this occurred about ten days ago. The child was 8 months old, a male. He does not think there is that neglect in making an early diagnosis by the general practitioner that we are led to believe by the

¹ See p. 630.

² See p. 617.

remarks of Dr. Reed. The condition is not a common one. Certainly early diagnosis and early operation were the important factors in the cure of the patient. Perhaps the experience of most of the members had been very similar to his, namely, that in the great majority of cases in which the surgeon is called to operate for intestinal obstruction he will find peritonitis. Mechanical obstruction of the bowel in infants was not common. It is true, a large number of such cases had been reported in the past, a great many cases were not operated on, and autopsies were not held, and these were doubtless cases of peritonitis. He congratulated Dr. Howitt on early operative interference and his results.

DR. RUFUS B. HALL felt that the essayist has had more than his share of cases of intussusception in infants in a few years. But he does not wish to go on record as saying that these cases do not occur in every man's practice more frequently than is generally believed. Since hearing the paper he recalled in sixteen years' general practice a personal experience with not less than half a dozen cases of intestinal obstruction under 1 year of age. He could recall three or four cases, seen in consultation, of children dying from intestinal obstruction. This was before very much was done in abdominal surgery, and long before he commenced to do any himself. He believes Dr. Howitt is correct in the general supposition that the condition is overlooked in the vast majority of cases until the children are practically dead. He believes the paper will do much good.

DR. JOHN M. DUFF, of Pittsburg, said his experience led him to believe that intussusception in infants occurs much more frequently than was generally believed. He has had the opportunity of holding postmortems upon several cases where the diagnosis was in doubt. He spoke from memory, because he did not expect to say anything on the subject. But in two of the cases there was a difference of opinion as to whether an intussusception was found to be present on postmortem. Within the past year he has had two cases of invagination in infants. In one, operation was refused; the child died, an autopsy was made, and an intussusception of several inches was found. The other case he operated upon, but it was too late, as peritonitis had already set in. He had arisen particularly to call attention to an experience which he would relate for what it was worth. A certain family a few years ago had a baby a little less than 1 year old that died with what was presumably obstruction of the bowel. The next baby, at about the same age, became sick in the same way and died. He was not the attending physician, but he saw the second child just before it died. A third child died with intestinal obstruction. He was called to see the case a day or two before the death of the child, and diagnosed obstruction of the bowel, suggested operation, but it was refused. An autopsy was held in this case and his diagnosis of intussusception was verified. In the same family he was called to see a young man, 23 years of age, suffering from typhoid fever, who had obstruction of the

bowel and died without an operation having been performed. No autopsy was held, so he could not say what the conditions were. He thought that these cases occurring in the same family were worthy of record.

DR. CHARLES GREENE CUMSTON had some personal experience with invagination in infants when he was assistant at the Hospital for Women and Children in Geneva. He saw quite a number of cases which presented the characteristic symptoms of acute intestinal obstruction. In one case, diagnosed as invagination, an operation was performed, it being followed by tuberculosis of the sigmoid without any intestinal obstruction.

DR. HOWITT.—What was the age of the child?

DR. CUMSTON.—I should say about 18 months.

DR. HOWITT.—You will notice that in my paper I confine my remarks to infants under 1 year of age. Beyond that age the conditions are altogether different.

First Day—Evening Session.

DR. JOSEPH PRICE, of Philadelphia, read a paper entitled

THE PROFESSIONAL NURSE AND HER TRAINING.

He said the time had passed when any question is raised by intelligent and experienced members of the profession as to the value of the trained nurse. Certain prejudices naturally exist against professional nurses; they are not specially harmful; they are rather to be respected, in a sense, than condemned. As physicians we have had some difficulty in overcoming these prejudices, as they were nursed into us through our childhood.

Nurse-training schools have become an important institution, not only to the young women who, with a creditable ambition, enter them to fit themselves for the profession of nurse, but to the physician; for the physician, whether in general or special practice, knows the value of the trained nurse, understands the close and vital relation she holds to his patient, how much her care and quick intelligence of needs do to relieve his anxiety and promote the well-doing of his patients. These schools are not of ancient origin; they are a new growth, one of our period; they have not reached that high standard of thorough practical training which it is possible for them to do. That their growth has been and is slow is largely due to the peculiar conditions under which their management is conducted. By necessity they are very generally associated with general hospitals, the supervision and direction of the affairs of which are in the hands of a board of trustees or managers, selected not so much because of peculiar or eminent fitness as for family association and the little they know of hospital management.

The training of these schools should be specially and singly directed to fit pupils for the duties of nurses. These duties, in all their details and all the steps in the training essential to discharge them faithfully and intelligently, should be definitely and clearly outlined by teachers of thorough experience, those

with a long bedside experience in association with trained and successful physicians. And not all thus trained have the fitness or ability to teach; they lack tact and those varied, peculiar qualities of mind and temperament that make the successful teacher. If they have no heart or soul in the work, regard it in a spiritless way, as something merely routine and mechanical, they are unfit for the responsible duties of teachers. The teacher in this field is both born and made. She only is fit to teach who thoroughly knows her subject, whose knowledge of theories is supplemented by a wide clinical experience—those bedside lessons so inestimable in their value to both physician and nurse. As these schools are at present conducted, there is no uniform standard by which they are governed; in fact, but few of them, if any, have any standard at all.

Those desiring to become nurses should commence their work early, while young, studious, and ambitious, while their habits are not so fixed as to make a change difficult if not impossible. When young they possess an enthusiasm which they are not likely to acquire later. When there is marked unfitness or lack of aptitude they should be discouraged from entering the profession. The same law of fitness applies in nursing as in other vocations. The essentials in the nurse, for successful nursing, may be briefly summarized thus: intelligence, for brains are as valuable in nursing as in preaching; love of the work; alertness of mind and body; abhorrence of idleness or loafing; tireless patience; strength and energy in every motion of the body, and this directed by a gentleness with will force in it; the faculty of adaptation to the peculiarities, the idiosyncrasies of patients; discreet in speech, knowing when to be silent, absolutely devoid of the too universal talent for gossip; absolutely pure in all their living.

The schools paying their nurses small salaries are turning out the best nurses. Young women enter these schools to prepare themselves for professional nursing. The profession is not one so much of special choice; their necessities urge them to seek some employment for a living; they have limited or no means; their parents have large families, and it is important that the daughters earn something. They cannot draw on their parents for two or more years for clothing.

Too much has always been expected of nurses in private nursing. Nursing through twenty four consecutive hours is too much to require of human endurance, and results in neglect of the patient. If we expect nurses to be bright, cheerful, and full of tact, we must have some practical consideration for their comfort, reckoned with the factors which contribute to preserve their health and promote their happiness. They should have regular and substantial meals and equally regular hours of rest. Relays in private practice, as well as in well-regulated hospitals, are important for the welfare of both patient and nurse.

Dr. Price rarely does a section in private practice that he does not ask for two or three nurses. The nurse taking care of

a drainage tube should do nothing else; she should devote her time to keeping herself and the tube clean. Post-operative accidents are very frequently due to careless nursing, to the neglect of an overworked nurse, one with other assigned duties than those of caring specially for her patient. In operating in hospitals in different sections of the country he frequently discovers before leaving that the nurse caring for his patient is also taking care of others.

Refined nursing in gynecology is a specialty and should be so considered by all abdominal surgeons. The nursing being special, the training must be special. Systematically trained special nurses are usually bright, cheerful, interested, and spirited. They are alive to the importance of their work, care for and infuse into their patients some of their own animation. They do not go about their work in a sleepy, perfunctory, or mechanical way; they note every move of their patient, every change. They are ready, courageous, and fertile in expedients when emergencies arise.

In the after-treatment of the patient the nurse realizes the importance of remaining with her and never turning her back upon her. If the nurse has served in a well-organized private hospital she is accustomed to relays and the requirement of ceaseless vigilance when on duty. In the case of a patient from whom a simple cystoma has been removed the nursing is simple, yet it should never be careless. Indifference in the simple cases results in the patient getting out of bed in the absence of the nurse and wandering around in search of a drink, morphia, or food. The care of a patient after the removal of a suppurating dermoid or an extrauterine pregnancy requires special attention. In such cases there should always be two nurses, one to care for the patient and the other to specially look after and clean the drainage tube.

The relations of physician and nurse are reciprocal. On the part of the physician there should be the clean, manly, and honest. To the nurse, a young woman, he stands in a dual relation. First, distinct and above all, is the one purely professional, that of adviser and director; the other that of friend in the broadest platonic sense, protector, counsellor in all that concerns her well-doing. He should keep in mind that where she serves him in serving his patient she should be paid well. He should not, indifferent to her interests, pocket all the fees and leave her out. As a rule he sees to it, in his own cases, that the nurse is paid. If the patient is too poor to pay both physician and nurse, the nurse should be the preferred creditor.

The physician should keep in mind that the untrained or improperly trained nurse is meddlesome and dangerous. Young, healthy, unmarried women are to be preferred; not widows or grass-widows, great-aunts or grandmothers. The young woman engaged to be married should not be admitted as a pupil into the schools; she rules out those who earnestly propose to follow the profession. She is dreamy and absorbed in matters foreign to her patient. If she intends to marry she

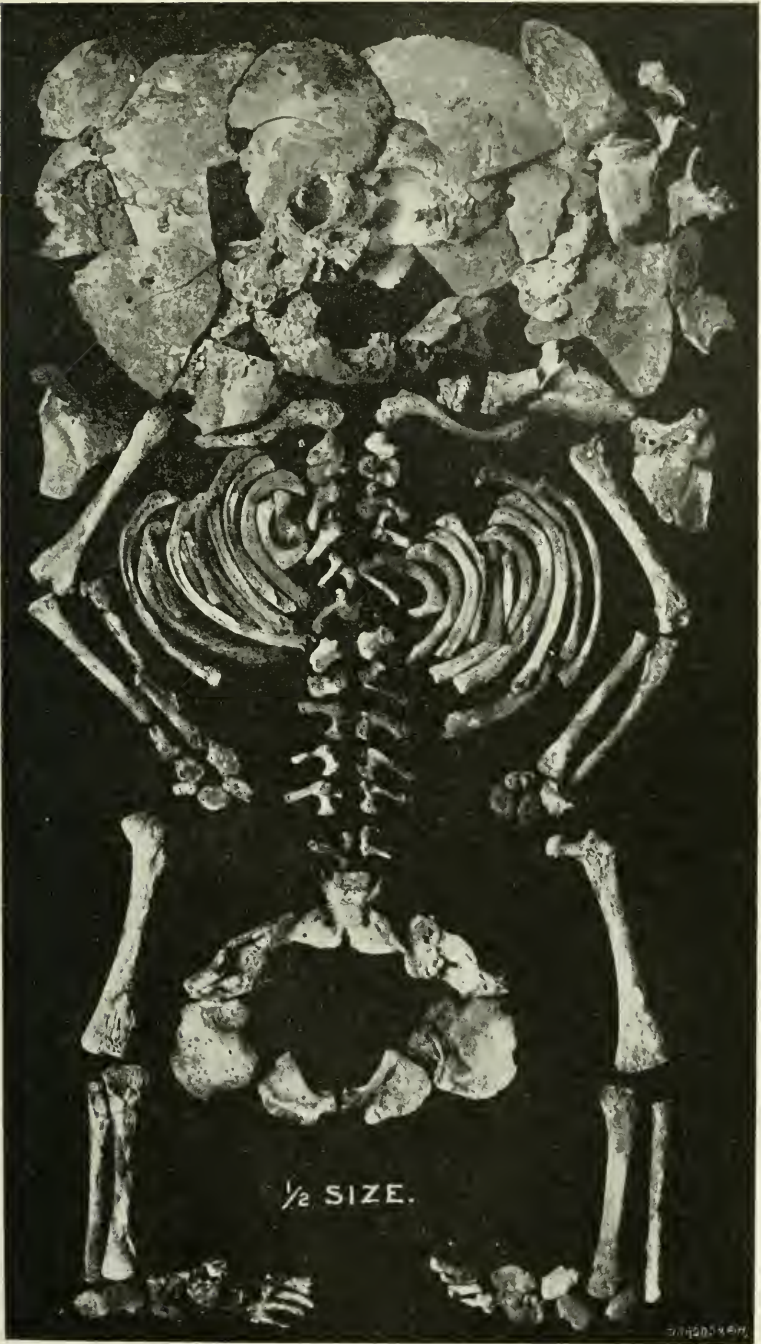
should marry early. for by this she will make a better wife and mother. It is not a rare occurrence in our general hospitals for a very lively and what is called romantic courtship to be carried on between a member of the medical staff and nurse during the examination of temperature charts or the chemical analysis essential in many cases. During this little side-show play the mortality of the hospital runs high. Other nurses congratulate themselves that the staff is a numerically large one and made up of material made tender by age—the frosts of many winters.

Second Day—Morning Session.

DR. WILLIAM J. ASDALE, of Pittsburg, read a paper entitled
EXTRAUTERINE PREGNANCY; MATURE FETUS, WITH PRESEN-
TATION OF SPECIMEN; SKELETAL REMAINS BORN SEVEN-
TEEN YEARS OVER COMPLETION OF GESTATION
TERM; CONDITION EVENTUALLY COMPLI-
CATED BY OVARIAN CYST, WHICH
RESULTED FATALLY.

In July, 1896, he visited the patient at her home in the country in company with her physician. She was a widow in her forty-fourth year. Previous to marriage, which took place in her twenty-fifth year, her health had been uninterruptedly good. When she had been married about fifteen months her menses were arrested and she believed herself to be pregnant. Abdominal enlargement was presently noticed and was progressive. She got along well until fetal movements began to be felt; then she first suffered pains. These pains were sometimes very severe. From this time her health began to decline. At the end of the usual period—nine months—she was, as she supposed, taken ill in labor; then, during about two weeks, she had great pain and there was some discharge of blood from the vagina, but no delivery. Her medical attendant and consulting physicians determined that she bore an extrauterine fetus. Its removal by operation was urged and declined. The enlargement of the abdomen attained corresponded to that usual in pregnancy. Soon after passing the labor period her size began to diminish, and six months later her proportions were about as before. Her health subsequently was never quite as good as before, yet during the following years her discomfort was not great.

About the end of 1894 she discovered that again she was undergoing abdominal enlargement. Soon a definitely described fulness was perceptible, arising from the pelvis as before and occupying the middle line. The growth of this tumor had been steady, but latterly rapid. Now the patient said she much exceeded in abdominal girth her former size when pregnant. She had not called a physician, however, until in May preceding Dr. Asdale's visit. Then for the relief of pains,



Skeleton of extrauterine fetus.—AsDALE.

occasional and severe, and apparently intestinal, and attended by slight hemorrhages from the bowel, she had only recently been forced to take her bed to stay.

Physical Condition.—Body not greatly emaciated, but tissues soft. Skin and mucous membranes very pale; conjunctiva pearly; temperature depressed; heart sounds normal, but heart's action feeble, yet not irregular, and but slightly accelerated. Debility very marked. She is unable to take much nourishment. No glandular enlargements; uterus small and high in the pelvis; vaginal roof tense and fluctuant. The presence of a large ovarian cyst was quite clearly made out, also a considerable intraperitoneal effusion; but the extreme debility, the exsanguination, the intestinal pains and the bloody flow from bowel (and not proceeding from hemorrhoids or other rectal lesion), gastric irritability, and ghastly aspect of the patient, pointed unmistakably to some more serious and complicating state. These signs, taken in connection with the history related, forced the conviction that threatened intestinal perforation and sepsis, through disturbance of old fetal remains, constituted the attendant complicating condition. She was now quite willing to submit to operative procedure promising cure. Her condition forbade an attempt to remove her to the hospital, and he was unwilling, because of the patient's reduced and likely septic state, to there and then operate. He promised to do so if later she should improve. He had hoped to secure her removal to the hospital, anticipating that the pathological conditions to be developed would prove to be of very unusual sort and such as to make a hospital residence for her care an important requisite. She did not improve, and, after suffering successive severe attacks of abdominal pain a few weeks later, died. At the autopsy, which the essayist did not witness, a monocyst of the right ovary of large size was emptied and withdrawn. One of the long bones (limb) of a fetal skeleton was found free in the pelvis. High in the left hypochondrium, underlying the left lower ribs and just beneath the diaphragm, were found the remains (skeletal) of a fetal body, disarticulated and closely packed together. The bones were invested by the intestine, a portion of which was cut away in the removal. The fetal soft parts had, at the time of autopsy, almost entirely disappeared.

On reviewing this case various reflections arise, and their suggestion may be helpful to others. The developments at the postmortem entirely agreed with the expectations he had in mind following his first acquaintance with the case, but he was astonished to learn the locality in which the fetal remains were found. All was easily understood, however, when it is remembered that the fetal body, originally surrounded by floating intestine and omentum, latterly, as the new cyst forming filled up, would become displaced and lifted higher and higher until it could go no further, being arrested at the diaphragm. Then pressure results must follow, ulceration and perforation, communication with the bowel, sepsis, and death soon after.

The terrible situation the operator must have had to deal with in this case, had the hazard been made, every surgeon of experience can realize. Confront he must surgical conditions by ordinary diagnostic methods impossible to locate or presuppose, the history of the case alone affording inference only. The relation of this case might well serve to deter the boldest tyro in abdominal surgery.

Without the occurrence of the ovarian cyst the fetal remains might have been borne unsuspected through a long life. The tolerance by the peritoneum of the presence of such foreign bodies undergoing disintegration and absorption was too well known to need mention. It is when communication with the intestine has become established with such remains that their presence becomes a serious danger and instant menace of existence.

Records of successful operations undertaken for the removal of long-retained fetal remains are so rare as yet to be exceptional. How much more doubtful, surely, is the result of operation when complicated as in this case!

DR. LEWIS S. MCMURTRY, of Louisville, has had some experience in dealing with extrauterine pregnancy by operative measures when the fetus has gone on to full term. The fetus perished. The case of Dr. Asdale was an illustration of a much more advanced stage of the same process, and, as the essayist had already stated in his very appropriate reflections on the case, these cases furnish great difficulties for the operator. He could not offer anything in the way of discussion, except to express his appreciation of the paper and his thanks to Dr. Asdale for the care he had taken in putting it together.

DR. ASDALE, in closing the discussion, said it was cause for regret that he did not attempt operation at once, yet he had been governed by the rule through his professional life in his work never to attempt to do that which he felt assured would be followed by failure. There were cases which are to be classed as inoperable. In cases of advanced uterine cancer, if in his judgment he thinks he cannot resort to surgical interference successfully or that the disease cannot be removed, he does not attempt an operation.

DR. WALTER B. CHASE, of Brooklyn, N. Y., read a paper entitled

REMARKS ON PRIMITIVE AMENORRHEA, WITH REPORT OF A CASE AND PRESENTATION OF ACCOMPANYING PATHOLOGICAL SPECIMEN.¹

DR. CHARLES GREENE CUMSTON doubts whether the specimen exhibited is one of teratoma. A teratoma, as it is usually understood, means a tumor containing a certain number of tissues which are found normally in the organism. On several occasions he has heard similar reports made of tumors termed

¹ See p. 512 of this JOURNAL for October.

teratomata, but which are not teratomata. He thinks the specimen of Dr. Chase is an example of the same thing. Teratoma is an extremely rare tumor. Clinically teratoma does not give rise to any symptoms. The testicle and ovary are the organs that usually become involved with this tumor.

DR. D. TOD GILLIAM cites the case of a woman who came to Columbus about twelve years ago. She was magnificently developed physically, was a perfect beauty, but had no vagina. She had a well-developed vulva, well-developed mammary glands, and all other parts of the body were equally well developed, except there was absence of the vagina. The woman told him that she had the ordinary amount of passion, as she supposed, and was anxious to be married. She came to him for the purpose of having an artificial vagina made. He told her he would do the best he could. He had no thought that the vagina would remain patulous, as there was nothing above to keep it open. He made an artificial vagina, and told her to wear a glass plug, otherwise it would be of no use, and that if there was any evidence of it closing up to return to him. Eighteen months later he received a letter from her stating that she was married soon after she left the hospital. Her husband had said nothing to her, and he inferred from this that the vagina was still patulous. He cited another similar case.

DR. A. B. MILLER, of Syracuse, cites the case of a girl, 18 years of age, who was contemplating marriage, but had never menstruated. Physicians had been treating her with various medicines. He suggested that an examination be made. He found a condition so common in cases in which there is absence of menstruation. She was a spurious hermaphrodite. She had broad hips, a masculine voice, but her passions were those of a woman excited in the presence of the male sex, but she had never experienced anything of the kind when in company with her girl friends. Physical examination revealed a rudimentary cul-de-sac. He wonders if, in a case of this character, an artificial vagina for the purpose of copulation could be made. He thinks it could not be done. He cited one or two other cases in members of the same family.

DR. CHASE, in closing the discussion, said the pathologist, in his report of the specimen, designated it as a teratoma. He would be glad to have Dr. Cumston make sections of it and carefully study the tumor, to determine whether it be a teratoma or not.

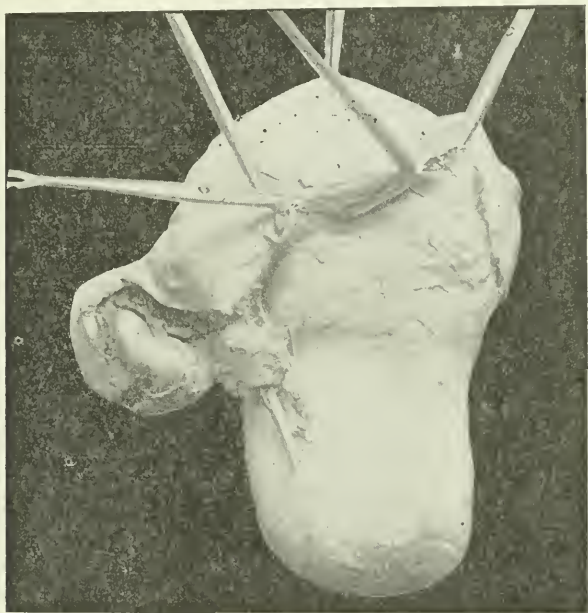
DR. RUFUS B. HALL, of Cincinnati, presented specimens illustrating an

IMPROVED TECHNIQUE IN OPERATION FOR INTRALIGAMENTOUS CYSTS.

All the cases have recovered. The results have been so satisfactory, he feels the operation promises a correct solution

of the difficulty attending the former operation for their removal.

First tap the cyst and empty it. Then ligate the ovarian artery on the tumor side at the pelvic border. Ligate the ovarian artery on the opposite side, outside the ovary if that organ is to be removed, inside if it is to be left. Divide the peritoneum down to and across above the top of the bladder on the same side, and push the bladder down. Ligate the uterine artery on the healthy side. Cut across the cervix, and clamp or ligate the uterine artery on the tumor side. The blood supply is then cut off and the patient has not lost a drachm of blood. The capsule of the tumor, the peritoneum, can now be



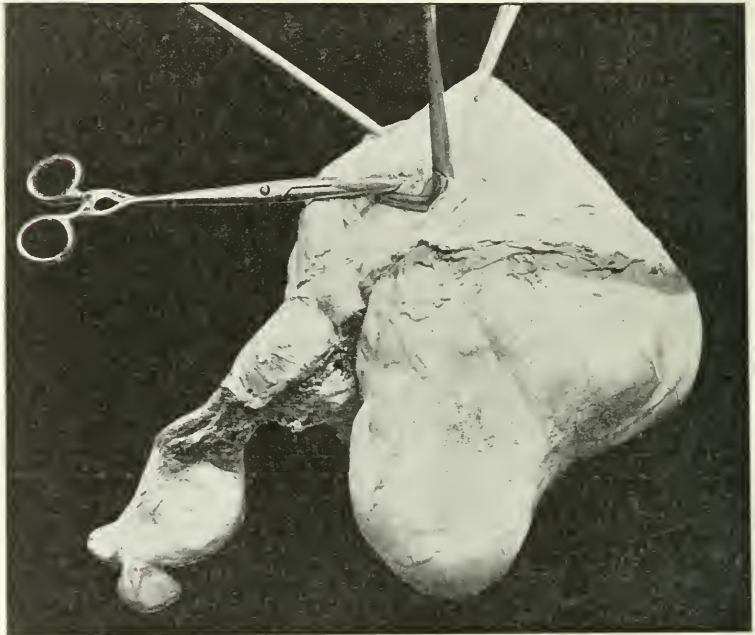
Case I.

divided at a suitable point behind and in front, and the tumor can be enucleated from below upward with much greater ease than from above downward, and with corresponding safety to the ureter, the rectum, and the iliac vessels. Close the peritoneum over the pelvic floor with running sutures of catgut. You can see every part of the field of operation.

CASE I.—Mrs. B., age 39, operated December 20, 1897. The tumor consisted of an intraligamentary cyst on the left side, somewhat larger than an adult head, and a suppurating ovary, size of a pint cup, on the right side. For the purpose of better drainage he made total extirpation of the uterus. From the photograph, Fig. 1, of the anterior aspect of the

specimen, which consists of the intraligamentous cyst partially distended with fluid, the entire uterus and the collapsed sac of the suppurating ovary, you will note the line of division of the capsule in front. It is the dark line about on a line with the ends of the lower forceps. A small stick is placed in the cervical canal to mark it. The shape of the tumor about corresponds with the pelvic cavity. It completely filled the cavity, and lifted the uterus out of the cavity to the patient's right.

CASE II.—Miss W., age 22, operated June 18, 1898. Fig. 2 represents the anterior aspect of the tumor, which when removed was much larger than an adult head. It is partially



Case II.

distended with water, and the puncture closed by forceps. The dark line across the front of the tumor corresponds with the division of the capsule. The lower portion of the tumor was dissected out of the broad ligament. The body of the uterus is to the left of the tumor, and to the left of that is a small ovarian tumor of the other ovary. You will observe from the photograph that more than three-fourths of the tumor was dissected out of the broad ligament in its removal.

DR. EDWIN RICKETTS wished to say a few words in regard to the removal of the placenta, as was done by Dr. Werder in two of his cases. Some five years ago, in a case of extrauterine pregnancy, he did this and performed total extirpation. The

child was dead, and in the report of the case to the Cincinnati Obstetrical Society he was severely pounced upon for advocating such a procedure. He is glad that Dr. Werder had the courage of his convictions, under the circumstances, to remove the placenta even at full term. He thinks to do otherwise is incomplete surgery. He believes the time is coming when the surgeon will not consider his operation complete until he has removed the placenta.

DR. LEWIS S. MCMURTRY has had experience in dealing with the placenta in cases of ectopic gestation where the woman has gone to full term and the child has perished, and he wants to say that no words can properly describe the hemorrhage which is encountered in such a case. The hemorrhage is something fearful, and it has no parallel that he knows of in surgery. Before the surgeon has time to do anything the patient is practically lost. This is one mooted point in the surgery of ectopic pregnancy that has to be settled. He does not agree with Dr. Ricketts that it is wise in all cases to proceed to remove the placenta, and yet he does not know what is the best thing to be done in lieu of that procedure. Death from hemorrhage will occur in cases where the placenta is removed, as well as when it is left, and surgeons have yet to determine the best course to pursue in these cases.

DR. WALTER B. DORSETT, of St. Louis, asked as to the danger of sepsis from leaving the placenta *in situ*, to which DR. MCMURTRY replied that the danger is not so much from sepsis as from hemorrhage when the placenta begins to be loosened.

DR. L. H. DUNNING, of Indianapolis, said it has been his misfortune to meet with two such cases, and after careful study and consideration of the subject of removal of the placenta he hesitates in doing this on account of the profuse hemorrhage. He will never forget the hemorrhage he met with at one time by manipulating the placenta slightly, and he will never forget the feeling of relief he experienced when he packed thoroughly, left it, and saw the hemorrhage cease. He will never forget the terrible feeling he experienced ten days later in attempting to save the woman's life from sepsis by removing that placenta. Unless he should encounter that form of ectopic gestation which he believes sometimes exists—namely, the intraligamentous retroperitoneal form with placenta attached above—he should leave it entirely alone. He said there are five cases of this form of ectopic gestation on record. He has encountered one such case. He operated on the case a short time after the death of the child, enucleated the sac containing the placenta without disturbing the placenta and without any hemorrhage.

As we study the subject more and more, the conclusion will be reached that the placenta should be left alone at full term. He thinks Dr. Ricketts is hardly right in advocating its removal.

DR. JOSEPH PRICE, of Philadelphia, said that in many cases with dead fetus the placenta ceases to grow, but as long as

there is a living placenta, so to speak, there will be profuse hemorrhage. If attached to the uterus and its adnexa its removal by hysterectomy is the safer procedure, but when it is attached to the hemorrhoidal plexus of vessels and the sigmoid it is a dangerous procedure.

DR. JAMES F. W. ROSS, of Toronto, had a case of ectopic gestation in which there was a ruptured sac, collapse following operative interference, and the placenta left behind. He inserted a Ferguson speculum into the sac as a drainage tube; the patient recovered and the placenta came away piece by piece. He believes it is the duty of gynecologists to educate general practitioners to diagnose these cases early. If they can be diagnosed before rupture takes place, operation becomes a comparatively simple matter and patients can be saved without difficulty.

DR. M. ROSENWASSER, of Cleveland, called attention to a case of extrauterine pregnancy which he reported last year before the Ohio State Medical Society, the woman having gone beyond term two weeks. The child was dead. In this case he experienced profuse hemorrhage on short notice; he rapidly packed the sac after removing the placenta. He applied a clamp between the sac and pelvic wall, and secured the ovarian artery when the hemorrhage ceased. In attempting to enucleate the sac he found the adhesions so firm to the intestines in all directions that he was compelled to leave the sac and stitch what he could to the abdominal wall. The patient recovered, although she became septic and her life was in danger for several days. He resorted to transfusion with normal salt solution after the operation.

DR. X. O. WERDER reminded the Fellows that he had had one successful case in which he left the placenta and removed the sac, with the exception of a small portion of it which he stitched into the abdomen. He had a terrific hemorrhage in that case, but he was able to control it by clamping the ovarian artery, putting a clamp alongside of the uterus, and the effect of the clamp was marvellous. He wishes to correct the statement that it is wrong to enucleate the placenta. He had not enucleated the placenta, but simply the sac containing the placenta. He is still of the opinion that the sac in these cases can be enucleated, and believes it is the operation to perform. If the Fellows would look up the number of cases of recovery after the living child had been extracted in cases of ectopic gestation, they would find quite a number of recoveries in which enucleation was accomplished. Dr. Dunning said there were only three or four cases on record. He thinks he is mistaken. He had published himself eighteen cases with recovery at the time he read his paper. He has since heard of two or three more in which the sac was enucleated. He does not mean to say that in all cases the sac was enucleated, but he knows this was done in more than three or four cases.

Second Day—Afternoon Session.

At this session the PRESIDENT, DR. CHARLES A. L. REED, of Cincinnati, delivered his annual address. He selected for his subject

THE EVOLUTION OF SPECIALISM.¹*Third Day—Morning Session.*

DR. D. TOD GILLIAM, of Columbus, read a paper entitled

TREATMENT OF GRANULAR EROSION OF THE CERVIX BY
LIGATION OF THE CERVICAL VESSELS.

He says: I cannot recall a single instance in which I have been able to effect a cure of granular erosion of the uterine cervix by the application of medicines. In speaking to others I find that their experience tallies with my own. About three months ago I had a very aggravated case in a virgin, and, as usual, was making little or no progress. I remembered that in some of my trachelorrhaphies I had seen granular erosion of the vaginal surface of the cervix disappear after the usual ligation and suturing incident to the Emmet operation, and I then thought of ligation of the cervical vessels. This was feasible, easily and quickly accomplished, and, in the married, could be done at the office without the aid of an anesthetic. I have had but three cases since hitting upon this method. These were respectively 23, 18, and 21 years of age. The first and last were primiparæ, the other nulliparous and syphilitic. In both cases of the married women the erosion extended some distance beyond the margin of the tear. In Case 1 the erosion was quite extensive.

I ligated the vessels on either side at the cervico-vaginal junction and allowed the ligatures to remain eleven days. On removing them I found that they had cut deeply into the cervical tissues. The erosion had disappeared completely. In my second case, the virgin, I removed the ligatures on the fourth day, hoping to avoid the pressure atrophy which had occurred in the first. There was no appreciable improvement in the erosion and I was greatly disappointed. At the suggestion of a medical friend I kept this patient three weeks in the hospital and then examined her again. The erosion had disappeared, except a small crescentic margin at the entrance of the canal, not to exceed a line in width, and this was so indistinct as to be scarcely perceptible.

My third case suffered a lacerated cervix in the act of dilatation preparatory to curettage—an accident that I have had occur to me only once before. The sutures were introduced and a ligature on either side. At the end of a week the ligatures were removed, at which time there was little evidence of

¹ See original article, p. 609.

benefit to the erosion. At the end of three weeks the sutures were removed, when the erosion had disappeared with the exception of the little crescent, as in the second case. Notwithstanding the uniformly favorable results in the cases reported, and the fact that heretofore I have been utterly unable to cure granular erosion of the cervix, I am still doubtful with reference to this method, and shall be until, after extensive trial, it has proven efficacious or futile, as the case may be.

DR. WILLIAM H. HUMISTON said he would have to change his ideas as to the etiology of erosion in order to be induced to adopt this method of treatment. In erosion of the cervix we have a changed secretion from the cervical canal or body of the uterus, or from both in his experience, and if, by ligating the lower portion of the cervix, we can benefit the erosion, it seems to him the disease above would cause it to recur again in a short time. He has therefore been in the habit of thoroughly curetting these cases, treating them by the dry method, and at the end of a week or ten days young epithelium is formed, and two weeks later there is a clean cervix.

DR. CHARLES GREENE CUMSTON considers erosions of the cervix in virgins as symptomatic of some infection of the endometrium. He considers every case of endometritis infectious, no matter what may be the organism causing it.

Theoretically, the method proposed by Dr. Gilliam is good. He has had a good deal of experience with varicose veins of the lower extremities with ulcers. There is no operation that gives such satisfactory results as ligation of the internal saphenous vein in the thigh—Trendelenburg's operation. He published a paper in the *Annals of Surgery* this spring, in which he reports a number of cases with complete cure. There has been no return of the ulcers or varicose veins after observing the patients from six to eight months.

In virgins erosion of the cervix is an extremely difficult condition to get rid of. He always examines the condition of the endometrium, as well as the uterus and its adnexa, and he thinks in many cases flexion will be found to be the cause of the trouble, and if this is corrected properly, perhaps adding to it a curettement, the patient will do well.

DR. WALTER B. CHASE, of Brooklyn, believes the operation of Dr. Gilliam for granular erosion of the cervix is simply tentative. However, he is glad the subject is brought up. Just what will be accomplished by this method is to be determined by future observation and experiment. In simple cases it seems to him entirely rational to expect that by cutting off the arterial supply by the inclusion of the cervical artery great benefit will accrue from it. If failures take place it will be worth while in time to go further up and ascertain whether there is disease of the endometrium.

DR. M. ROSENWASSER thinks the operation will have a limited use. Recently a case came to him with a severe erosion half-way up the cervix, the erosion being covered with yellow pus, which leads him to think that it was due to gonorrheal

infection. He had the pus examined by a microscopist, but no gonococci were found. After receiving this information the patient was put under an anesthetic, a thorough curetting was done, and the uterine cavity swabbed out with pure carbolic acid. At the end of several weeks the patient was discharged feeling much better. Several weeks later she returned with the erosion as bad as ever. In addition he was able to feel two distinct lumps on either side, indicating infection of the tubes. There was salpingitis, in the first place, and the disturbance caused by the curetting, while it may have helped to drain the tubes, led to further irritation of them, and now he has a pair of pus tubes to deal with. The patient for the last six months has been constantly discharging some pus. He has examined it, and distinct cocci have been found. He believes the infection to be gonorrheal.

DR. WALTER B. DORSETT calls attention to an article by Dr. Maury, of Memphis, in which there are related a number of cases of trachelorrhaphy with atrophy of the uterus resulting therefrom, probably due to cutting off the blood supply of the circular artery. He thinks the rationale of the treatment given by Dr. Gilliam is along the same line.

So far as erosions of the cervix are concerned, he thinks we frequently have them from displacements alone, where there is no specific cause, and they can be remedied by pessaries. He thinks the application of pessaries is very much neglected by both the general practitioner and the gynecologist.

DR. EDWIN RICKETTS, of Cincinnati, believes that no one would dare to advocate such a procedure as that proposed by Dr. Gilliam in the case referred to by Dr. Rosenwasser, nor does he think it would be advocated where the erosion extended into the fundus of the uterus.

DR. W. E. B. DAVIS, of Birmingham, regrets that he did not hear all of Dr. Gilliam's paper. Some years ago he was to have read a paper on the treatment of chronic metritis by ligation of the arteries. This paper he did not present, yet he has had some experience in operations of that class. Dr. Davis believes that the cases are few in which Dr. Gilliam's method can be resorted to. Another thing is to be borne in mind—namely, that, in a measure, the surgeon by so doing would stimulate the menopause. Tying of the uterine arteries would bring about such a condition, and with erosion of the cervix present there would be a tangible indication for the development of malignant disease, because there is great liability to development of malignant disease in these cases at the menopause.

DR. GILLIAM, in closing, said he does not confine himself to tying the cervical vessels where other indications exist. In every one of the cases in which he tied the cervical vessels for granular erosions he curetted the uterus before. He has time and time again curetted the uterus for granular erosions of the cervix; he has also corrected misplacements of the uterus; he has resorted to constitutional measures for the benefit of the

patient, and has met with a succession of failures in the great majority of cases. He hopes the Fellows will give the method a thorough trial and report their results later.

DR. B. SHERWOOD DUNN, of Boston, read a paper entitled

THE RELATION OF DISEASES OF THE FEMALE GENERATIVE
ORGANS TO NERVOUS AND MENTAL AFFECTIONS.

There is perfect truth in the claim of neurologists that ill health in woman is frequently the cause of her uterine troubles; but it is even more true that the various diseases of the uterus and its adnexa are the exciting cause of the ill health that frequently makes its appearance throughout her whole system.

The exact knowledge that we have of physiological action compels a belief that these organs form the most prominent links in the chain of woman's health of both mind and body. It is unreasonable and unscientific to style a woman neurotic, hysterical, hypochondriacal, and treat her as such, ignoring the while local disease of her pelvic viscera which aggravates and accentuates, and in many instances is the exciting cause of, these neuroses; and apart from these direct results there are those indirect evidences that follow upon interference with the secreting functions of the liver and kidneys and with the metabolic action of the spleen. I reiterate that it is a blind injustice to deliberately and complacently ignore the influence of local disease as a causative agent of morbid changes in her central nervous system.

In those cases where there are gross pathological changes—as, for instance, in those suffering from marked displacement of the uterus with adhesion; extensive laceration of the perineum and cervix, the latter everted, completely eroded, and ulcerated; edematous and tumefied ovaries with multiple fibroid growths in the uterine walls—in the opinion deliberately formed upon a basis of wide experience by the leading operators of the world, prompt and complete operation upon the universally diseased organs will invariably and promptly restore the patient to health and nervous equilibrium and save her the expense and loss of time accompanying the rest treatment under the direction of the neurologist, which in these cases is vain, grotesque, and reprehensible. On the other hand, picture a case of an American woman, born and reared in the midst of luxurious surroundings, who, married at an age under 22, bears four or five children within a period of six years, and, following the practice and instincts of the majority of American mothers, undertakes to supervise the physical care of the children, not willing to leave them to the mercy of a hireling, particularly during the night. At about the end of this time the majority of these mothers become physically and mentally broken. They complain of weariness, nervousness, insomnia, inability to walk any great distance, constant bearing-down feeling in the pelvis, headache both occipital and frontal, back-aches, disagreeable dampness of the hands, irritable bladder,

hyperesthesia, dyspepsia, points of tenderness in both ovarian regions, dysmenorrhea, bad dreams, constipation. With ordinary common sense she attributes this tableau of symptoms to the strain of the rapidity of her childbearing and presents herself to the gynecologist. Upon examination she has a slight tear of the cervix, slight rectocele and cystocele, relaxation of the ligamentous supports that permits of easy manipulation and displacement of the uterus. Both ovaries are sensitive to examination. This is a practical case for treatment at the hands of the neurologist. There may be those calling themselves gynecologists who would magnify the importance of the local pelvic condition and recommend the several plastic operations as a cure all. But it must be said that they are not representative of the intelligence of this department.

There is no condition under which one could say he was operating to cure either hysteria or neurasthenia. We operate only to cure pelvic disease, but often the cure of these neuroses follows.

Two theories may be offered why inflammatory diseases of the uterus and its adnexa are potent etiological factors in exciting alienation in females—the reflex theory and the internal theory. The innervation of all the pelvic organs is supplied chiefly by the inferior hypogastric plexus, possibly the most important of all the nerve plexuses, controlling as it does the delicate and complex organic mechanism charged with the reproduction of the human species. The constant irritation of these lower nerve centres incidental to local disease must react upon the higher centres, begetting in some the delusional manifestations which determine mental alienation.

In the recent physiological theory of internal secretion we may find the true solution of the deleterious effects that diseased sexual organs exercise upon the distant nerve centres. Some physiologists claim "there is a normal and constant contribution of specific material by the reproductive glands to the blood or lymph and then to the whole body." If the secretion theory is worthy of consideration—and I think it is—and those glands give off elements necessary to the economic equilibrium, it is possible that in the presence of diseased conditions they may give off vitiated elements that act as toxins, and the implantation of pathologic conditions upon these organs must in no usual degree disturb the mental equilibrium, especially in those predisposed to mental weakness.

DR. WILLIAM H. HUMISTON, of Cleveland, Ohio, followed with a paper on

THE GRAVER NERVE DISTURBANCES DUE TO ORGANIC CHANGES IN THE GENITAL ORGANS.¹

DR. W. E. B. DAVIS, of Birmingham, Ala.—I think that this country, which has been foremost in many good things,

¹ See original article, p. 710.

and particularly the Southern part of it, is also the cause of much harm in its enthusiasm of surgical procedures for the relief of nervous troubles. You will remember the late Dr. Battey, who was unquestionably the father of pelvic surgery, did all his operations without any knowledge or conception of the pathological condition to be relieved. In other words, he operated for symptoms. He repeatedly stated that he removed ovaries in cases which he felt he could not relieve by other treatment. The operation was frequently done in cases where there was no apparent disease, with bad results, consequently neurologists became prejudiced against surgical procedures for the relief of pelvic trouble. No doubt the teachings of Dr. Battey have led largely to the prejudice that is manifested now by neurologists. Of course Dr. Battey and his followers were misled in many cases. We know how hysterical women may sometimes be operated upon and be relieved, it makes no difference what the operation may be. An operation on this class of patients seems to relieve for a time, whether anything is accomplished physically or not. In our State, Dr. Battey operated on a number of cases at the institution for the insane. In some of them he operated without any conception of the pathological conditions, and not for the relief of pathological trouble, and this point has been lost sight of by neurologists. Yet I believe there are a few cases in which great good has been done by Dr. Battey where no pathological trouble was found. As gynecologists we know that we accomplish the most good in those nervous cases where we find marked pathological conditions. The more disease we are compelled to remove, the sooner the patient gets well; and the less the disease and the greater the amount of nervous trouble, the slower is the case to recover. Neurologists expect too much in old cases of pelvic trouble that have progressed perhaps for fifteen or twenty years. Of course, if these patients do not get relief at once, the operation is considered a failure. We might just as well expect a man who has had financial reverses, or who has been losing a large fortune for fifteen years, to have his nervous system restored by the restoration of his money. We know the nervous system does not recover so quickly. Unquestionably, in cases where we find marked neuroses, they are instances in which the women have a predisposition to nervous and mental troubles, as has been pointed out by neurologists, and no doubt they are right about it. Diseased pelvic organs should be removed, because they have such a marked effect upon both the mind and nervous system.

DR. LEWIS S. McMURTRY, of Louisville, Ky.—There is no subject that can come before the profession that needs as thorough a ventilation and as clear an understanding as this. There is a great misunderstanding existing between gynecologists and neurologists about these matters, and there is a total lack of uniformity among gynecologists as to the relations that exist and as to what can be obtained by surgery in the treatment of neuroses in women. We do not doubt the observations

that one or another make when they are brought here, but we must discuss the conclusions that are drawn from certain observations. We will have reports of cases made to us of where a woman has melancholia, such as Dr. Humiston reported this morning, in which, after an endometritis is relieved and a displaced uterus corrected, a cure is effected. Now, I do not doubt the accuracy of Dr. Humiston's observations in regard to these cases, but I do doubt very much the conclusions that he draws from such a case. Let me illustrate what I mean. We may have a woman with endometritis and a slight displacement of the uterus, with a cystic or slightly prolapsed ovary. Those conditions we frequently see in women. We may find them in a large number of women who may not complain about their pelvic organs, who have never requested that they be treated, and yet upon investigation we will find those conditions. Take a case of that kind, have her taken to a private hospital, as Dr. Humiston did one of his patients, and treat her with the utmost kindness and gentleness, give her the services of a skilled physician who commands respect and confidence, take her from home, from the conflicts that sometimes take place between brothers and sisters, parents and sisters, or between a wife and a brutal husband, and make her feel that she has something to live for, and she will begin to improve. If, along with this, the endometritis be relieved and the slightly displaced uterus be corrected, a cure will doubtless be effected. There is a large scope here for errors in conclusions. I have had my full share of dealing with this class of cases, and the very able exposition of the subject by Drs. Dunn and Humiston, and the remarks of Dr. Davis, are all in the right direction. The pelvic organs of women are connected, through the nervous system, with the nerve centres in such a way as to exert a very potent influence on the disorders of the nervous system. I think neurologists are coming to the conclusion very rapidly that when we have an obscure neurosis in a woman the pelvic organs should be examined, just as the eyes are examined; and if there is a focus of irritation found it should be relieved, just as eye strain should be corrected. If there is any lesion that needs attention it should receive it. All of our insane asylums have a large number of women in them who might recover but for the little straw that breaks the camel's back; that is to say, they are in a condition to get well, provided they are relieved of sources of irritation, namely, some trouble with the pelvic organs that is constantly irritating the nervous system. We can say the same thing with reference to fissure of the anus; it is a constant source of reflex disturbance from a peripheral focus. Yet it is a very different thing from coming down to general statements that operations upon the pelvic organs will cure insanity and other severe and formidable neurotic diseases. I think much discredit has been cast upon gynecology by ablation of the uterine appendages, because at the menstrual period, on account of dysmenorrhea, neurotic disturbances are aggravated. By abla-

tion of the uterine appendages we precipitate all of the explosive neurotic effects of the menopause upon a woman in this exquisitely sensitive nervous condition, and it has been a great discredit to our art. You will find a number of these cases in almost every community. And I take occasion to remark here that specialists are not the ones that are doing this work. It is the general surgeon. Doubtless ablation of the appendages is done for a neurosis that has nothing more to do with the pelvic organs than it has with the eyes or any functional disturbance of the organism, hence the point we come to in the papers of Drs. Dunn and Humiston leads us in the right direction, namely, that we should operate for lesions only. It requires great discretion in the selection of appropriate cases to be treated. It is really painful to me to have come into my office one of these cases, that I can recognize in a few minutes. Functional neuroses in the lower class of people are very common. The physician who assumes such cases has a great responsibility as well as an enormous amount of labor in inaugurating a system of education to get them out of this condition. It is necessary to have nurses who are companionable for these women and capable of making life worth living, creating a healthy atmosphere, inspiring them with healthy ideas about life, and doing everything to build them up, together with other remedial measures. A great many of these cases are not suitable for surgery, and whenever it is resorted to in cases where there is only a slight departure from the normal condition, such as endometritis and menstrual disorders which may be the cause of the nervous disorder, it is a mistake.

DR. CHARLES A. L. REED, of Cincinnati.—Inasmuch as I have been identified with this branch of our scientific polemics, I feel that I want to say something on the excellent paper that has been prepared and presented in such a scholarly manner by Dr. Dunn. I trust that Dr. Dunn will experience more pleasant results from the publication of this contribution than I did when, some nine or ten years ago, I reviewed this subject in somewhat direct terms in an address before the Erie County Medical Society of Buffalo. I do not recall a contribution that seemed to excite so much animosity on behalf of asylum superintendents, and from whom there emanated a general chorus of protests and abuse. From comparatively few quarters did I receive words of encouragement and of commendation; but shortly after that one of our distinguished colleagues took charge of an asylum, and, recognizing the truth of what I had said, he exemplified it in a conclusive manner in the work of the institution over which he presided. I allude to Dr. George H. Rohé, then in charge of the Maryland Hospital for the Insane. If anything were needed to make the case conclusive, that deficiency has been supplied by the essayist this morning and supplemented in turn by my distinguished friend and neighbor, Dr. Humiston, of Cleveland. The conviction that there is an etiologic relationship between organic disease within

the pelvis and general functional neurotic disturbances is laid in the deepest possible appreciation of the truth in both physiology and pathology. Nothing is more conclusively demonstrated to-day, and it were useless in this presence and at this juncture to trace the morbid influences as they traverse the nervous system from the central telegraphic office to the remotest nooks and crannies of the system—it were simply futile to trace these influences at this juncture of the discussion. Let each of us go from this assembly hall reimbued with the conviction that duty calls us in this direction, and not cease the contest until results are realized; and in every institution used for the incarceration of the insane let us see that there shall be that intelligent administration of the necessities of those unfortunates that shall result in their greatest welfare.

DR. JOHN M. DUFF, of Pittsburg.—There needs to be great care exercised when we utter words such as those that have been uttered by Dr. Reed with reference to the work in our insane asylums. As I said last year in regard to Dr. Dunn's remarks, I believe his statements were very accurate and scientific, but in at least half a dozen cases that have come under my observation this year I have been refused operation because Dr. Dunn was understood to say that a woman could not have her ovaries removed without affecting her mental condition. This is dangerous ground to tread upon, and we must consider it carefully before we endeavor to influence those in charge of our asylums that there shall be a wholesale castration of inmates for the relief of mental disturbance. Just how we are going to do this work in a proper manner is very difficult to understand. When we, as an association, say that our asylums should be entered, we should explicitly state that they should only be entered by men who are adepts in diagnosis, prognosis, and operative measures. If we open the gates and allow every man who thinks he can remove an ovary to do so, we will have very disastrous results. We see this in practice daily outside of the asylums.

I expected to have had a woman here this morning upon whom I operated about eleven months ago. She was brought from an insane asylum. Her family came to the conclusion that they would bring her home and try to care for her. She had suicidal mania at the time she was brought to my office, so that it took three persons to bring her to the office. On examination I found the uterus retroverted, an ovary enlarged. I removed her ovary and fixed her uterus. This woman went home at the end of four weeks, took charge of the house, her sisters being employed in stores in the city, and she has been keeping house for them ever since. For months she has come to my office regularly once or twice a month and she expresses herself as being in the best of health, and appeared before the class at the college.

DR. D. TOD GILLIAM, of Columbus.—I think we have struck the right chord with reference to the relationship existing between neurology and gynecology. The craze has gone over

the country, having started with Battey's operation, and every gynecologist operates on the pelvic organs for neurotic states; and not only that, some of them promise the patients and their friends that if they remove this or that lesion the patient will be well. This state of affairs does not exist to-day among the conscientious, the more intelligent and advanced gynecologists. The tenor of the papers to-day has been of the right order.

While Dr. Humiston's paper was conservative, I think he drew deductions from the cases reported with which we cannot entirely agree. We want to place ourselves on record to the effect that the pelvic organs are very important; that there is probably no other set of organs in the body that have so much influence on the nervous system or upon the brain centre as the pelvic organs. This is manifested in slight departures from physiological conditions of the pelvic organs. You will find women who have mental and nervous perturbations at the time of menstruation, showing that there is an intimate relationship existing between these two. Women become irritable during the menstrual period, and this irritability or depression of mind may lead to melancholia or some other form of insanity, so that no one can doubt that there is this relationship. Why should we eschew it in making up the factors of trouble? When a patient comes to me with a confirmed neurosis and a pelvic lesion I do not promise to cure her of the nervous trouble. Happily in a certain number of cases a cure follows, sometimes immediately, sometimes after a considerable interval. But I promise to do the best I can to remove the lesion. I do what I can to help relieve her physical trouble. If there is something the matter with the eyes I send her to an oculist; if she has any trouble with the intestinal canal an effort is made to relieve it. The gynecologist should do his part, and wherever a pathological condition exists it should be corrected.

DR. J. HENRY CARSTENS, of Detroit.—Dr. Gilliam has struck the keynote. We fail to see that there is any trouble of the alimentary canal, we fail to see that there is something the matter with the kidneys, which produces more nervous symptoms than we are aware of. We overlook these things, we neglect them, we operate, and the result is failure, and discredit is cast upon gynecology. In all nervous diseases be very careful about operations. Do not promise patients too much. Have them under the closest observation; look them over carefully from head to toe, over and over again. You may remove a diseased ovary or correct a displaced uterus, and yet there is something back of this. If you are wise look at everything, otherwise you will get yourself into trouble.

DR. DUNN.—Dr. Carstens, in his remarks, has dissected the cause of the deprecatory attitude taken by neurologists respecting our practice. We ourselves are entirely to blame for the position that this department of medicine now shows toward us, which heretofore has gone hand in hand with us. Never

make a diagnosis until you have examined a patient from the hair of her head to her toenails.

Dr. Davis spoke of the initiation of this much-to-be-deprecated practice of operating upon healthy organs for neurotic conditions. A greater mistake was never made in surgery. There is no doubt about it. Neurologists are now declaiming against the influence of any operation, in the presence of any character of pathological lesion, as having absolutely no influence whatever upon the nervous system. Dr. Gilliam, in his remarks, mentioned the possibility of our being led into error in promising post-operative results. The last case I examined in my office the Saturday before starting for this meeting was a fine, well-nourished, handsome, squarely-built lady of 40 years of age, at the head of one of the largest millinery establishments in Boston. She is a woman who manages some twenty or thirty girls. She has built up a business from small beginnings. She is a woman of extraordinary self-poise, self-possession, and great ability. She came into my office with her husband, desiring relief from periodical hysterical attacks at the catamenia. I took her history carefully, made an examination, and, in making the examination, she cautioned me to be careful not to hurt her. She told me that she was exceedingly sensitive of any manipulation of the sexual organs. I introduced my finger lightly into the vault of the vagina and found the left iliac fossa almost completely filled with a fibroid. The moment I touched it she shrank, her muscles contracted, and I asked her if it gave her much pain. She replied: "It does not pain me, but it sends a shock all over me." She said: "If you did that several times I would have one of my seizures." Feeling that the territory was too tender, I made a rectal examination, passed my finger lightly up under the tumor as delicately as I could, and when I reached the region of the ovary she had an hysterical seizure, and it was only with the aid of the nurse that we kept her on the table. This woman has a pathological condition of which she is to be relieved. Can I promise that the removal of that fibroid will cure her hysteria? I certainly cannot. I do not know anything about what the post-operative result will be upon that woman's nervous system in the presence of those pathological conditions. It is self-evident that the existing pathology in her pelvis is the exciting cause of her neurosis, but has that neurosis been sufficiently long established to have become a permanent factor in her system? Will the relief of the pathological condition cure the hysteria? It may, and the fact that she had an hysterical attack during a most careful examination would lead us to promise ourselves that when the source of irritation is relieved she will gradually come back to her nervous balance. Nevertheless, as much as I was tempted to tell the lady that in my judgment the removal of the inflamed adherent fibroid would restore her nervous condition, I knew by long experience it was absolutely out of the question and improper for me so to do. I told her she would have hysteria as long as the fibroid was

there, but I could not promise to relieve the hysteria by removing the tumor. If we will take a position of that character, the odium that is attached to operative procedures in the presence of psychotic and neurotic conditions will be lifted from our branch of the profession and we will return to an even field with our neurological brothers and stand upon the same ground.

DR. HUMISTON.—In answer to Dr. McMurtry I will say that my paper dealt with the graver forms of nervous disturbances due to organic pelvic disease. The burden of his talk was upon slight uterine displacements, slight prolapse, which I do not think is applicable to the statements that I have made. I could have reported in my paper to-day cases that have occurred in my practice during the last year and a half, but the cases I have detailed antedate that time and have been well during this long interval. That is why I have reported them. The case he speaks of, that was removed to my hospital with pleasant surroundings, taking her out of the asylum, etc., this being an important factor in the cure of the case, I will say that this woman was absolutely despondent. She believed she had lost her soul. She made the remark that "the devil came down one morning and split open my skull and removed my brain." She said I could do what I cared to do, but that I would waste my time. This woman made a brilliant recovery after operative interference.

Dr. Dunn has spoken with reference to thorough examination as a necessary preliminary to all of these cases. The gynecologist who immediately investigates the pelvic region without giving attention to the head, the chest, the abdomen, and general nervous system is going to make mistakes frequently. I find many conditions by carefully investigating these cases—a dilated stomach, autointoxication, etc. I take the case in its entirety, and when I have corrected those conditions and still have a pathological condition within the pelvis I offer the patient a strong hope that she will entirely recover from a proper surgical procedure.

DR. RUFUS B. HALL, of Cincinnati, read a paper on

ALBUMINURIA COMPLICATING GYNECOLOGICAL OPERATIONS.¹

DR. WALTER B. CHASE, of Brooklyn, feels sure that the conscientious surgeon cannot be too careful to be assured in advance of any operation, capital or otherwise, that the patient is in the best possible condition. He calls particular attention to the point that a given specimen of urine, showing the absence of casts, of albumin, pus, and blood, is no guarantee that the kidneys are secreting properly. He has come to this conclusion after experience and observation. Personally he wants to know more than those facts. He has a quantitative and qualitative analysis of the urine made before the patient is submitted to an operation. The urine is carefully examined for three or four successive days, its amount measured, and if

¹ See original article, p 678

pus and blood are found the chances are there is serious trouble with the kidney. A case was cited in point.

DR. CHARLES GREENE CUMSTON referred to the use of chloroform and ether. He is very familiar with chloroform, because in the hospital with which he was formerly connected he used it almost exclusively, and the only death he has ever seen was from ether. He believes every patient, whether he or she, as the case may be, who takes ether, chloroform, or bromide of ethyl, should have a complete analysis of the urine made prior to operation. It is not sufficient to look for albumin, but a careful examination should be made as to the amount of urea passed. He considers the amount of urea eliminated of more importance than the question of whether albumin is present in the urine or not.

DR. B. SHERWOOD DUNN, of Boston, said there is one complication that follows the administration of ether that has not been mentioned, and that is ethereal bronchitis or ethereal pneumonia. This is not seen when chloroform is used. He had never seen ether administered in his life until his return to the United States from Europe, and in all of the thousands of cases he has seen operated, each and every one of them was anesthetized with chloroform; and in two years' service, where there were from three to four operations performed daily, excepting Sunday, he never saw a patient die from the effects of the anesthetic. Ether is preferred in the United States, as a rule, to chloroform. He ventures to say it is because almost anybody can administer it, while it takes an expert to administer chloroform.

DR. MILES F. PORTER, of Fort Wayne, Ind., spoke of the treatment of those cases in which suppression of urine occurs. We have in our hands no method of treatment so worthy of consideration, and so capable of rescuing these patients, so to speak, from the jaws of death, as the intravenous transfusion of large quantities of saline solution when suppression of urine occurs preceded by the emptying of the veins. Of course, if the patient is previously exsanguinated very largely, this is not necessary. It is, in his opinion, a most effective means of treating threatened death from insufficient urinary secretion. Another point: While it is true that albumin of itself, coupled with casts, is not a correct indication of what the kidneys are doing, on the other hand neither is the amount of urea passed a correct index. He has had patients die from what is called uremic convulsions, when he was told by the pathologist only three hours before the patient's death that there was danger of death from the condition of the kidneys, although they were secreting the normal amount of urea, all of which simply meant that what is called uremia in some cases is simply auto-infection from other sources.

DR. EDWIN RICKETTS said it is very essential that the anesthetist understand his business, and if he had his way he would build a wall between the anesthetizer and operator. The cold tables made use of in bringing patients, and putting them under

an anesthetic and scrubbing their bellies while under the influence of it, getting them ready to operate, is a mistake. Patients have rights and demands on surgeons, and were he to be operated on himself he would have it distinctly understood that the lecture was to be short before he was placed under the anesthetic, and he would want the operator to proceed promptly. He emphasizes the importance of not prolonging the stage of anesthesia a minute longer than possible.

As to the use of chloroform, he believes a much greater quantity of it is administered than is necessary.

DR. W. E. B. DAVIS said it is the experience of nearly all that in severe abdominal operations there is a great diminution in the quantity of urine passed in the first twelve hours. The severer the operation the more carefully this point is noted. In extensive operations for malignant disease there is a tendency to suppression of urine. He calls attention to an excellent paper published by the late Dr. Bedford Brown, of Virginia, in which he gives his experience with the two anesthetics. Where the brain had been exposed a blanching was observed with the use of chloroform, and congestion with the use of ether. His experience has been confined largely to the use of chloroform. The deaths following chloroform are largely due to inexperienced anesthetists. It is a serious matter to use chloroform indiscriminately. Inexperienced men should not give it. While he uses chloroform in his work, he believes for general use ether should be recommended.

DR. D. TOD GILLIAM indorses what Dr. Davis has said. He believes with a skilled anesthetist the use of chloroform will be followed by excellent results. In good hands it is a safe anesthetic. For general practitioners, however, throughout the country who have not the advantages of employing skilled anesthetists, ether will be found the safer of the two.

DR. FREDERICK BLUME, of Pittsburg, Pa., directs attention to the experiments of Thomson and Kemp as to the safety of the various anesthetics.

DR. WALTER B. DORSETT indorses the position taken by Dr. Ricketts as to the quantity of chloroform used. He has been operating for twelve years and has not given a particle of ether in that time. He attempted it once, anesthetized the patient, came near losing her, and reverted to chloroform. He does not do an abdominal operation with the patient in any other position than the Trendelenburg.

DR. HALL, in closing, said he did not take up the subject of urinalysis for obvious reasons. In reference to the quantitative analysis, the amount of urea, etc., these were important points. In all cases where the amount of urea is deficient there is some inkling of it when the urine is examined for albumin and casts.

He agrees with Dr. Porter in reference to the value of saline solutions, but he does not believe they will have the immediate effect of making the kidneys secrete more urine in the case of suppression from either cause. The experiments of Thomson and Kemp, referred to by Dr. Blume, are referred to in the

paper. He hopes every one will read that article, as he thinks it will do more to convince surgeons of the different effects of the two anesthetics than anything he could say in ten papers.

DR. X. O. WERDER, of Pittsburg, read a paper entitled

CLINICAL OBSERVATIONS BASED ON OVER ONE HUNDRED
ABDOMINAL SECTIONS FOR OVARIAN CYSTOMA.¹

DR. JAMES F. W. ROSS said he is interested in that part of Dr. Werder's paper which relates to the case of tumor that had become amalgamated to one side of the other centre tumor, having grown together, with two pedicles, because he does not think in the whole range of abdominal surgery, outside of an operation for ectopic gestation and removal of the placenta, one can have anything which is more bloody during its performance than the removal of such a double tumor. The reason of this is quite obvious. It is impossible to get to the one pedicle. One can surround the pedicle on one side, but the difficulty is in reaching the pedicle on the other, and the tumor will bleed with great rapidity. He has had one such case, and to this patient the priest administered the last rites of the church, as it was thought she would not survive the operation. However, she recovered. In this operation there was one fact deeply impressed upon him—namely, that surgeons must be extremely rapid in dealing with these cases, using a large number of sponges for the purpose of protecting the bowel and preventing adhesions, and two or three dozen sponges to stay bleeding.

DR. LEWIS S. MCMURTRY limited his remarks to one or two points—namely, flushing and drainage. He cannot conceive of cases of ruptured cysts, where the surgeon can manage them who has not developed the skill of Dr. Werder, without flushing and drainage. What he arose particularly to speak of was this: He operated on a young woman, 23 years of age, with a multilocular ovarian cyst with twisted pedicle, there being an active peritonitis. He soiled the peritoneum with a chocolate-colored dirty fluid, cleansed it thoroughly by flushing and drainage, and she developed at once a fever. He made a report of the case with the temperature chart attached, considering it one of typhoid fever, and which ran the course of typhoid fever after the ovariectomy was performed. He had in this case a physician in consultation who is a professor of the principles and practice of medicine, and he agreed perfectly that the case was one of typhoid fever.

Dr. McMurtry emphasized the importance of surgeons knowing more about the bacteriology of ovarian cysts and their contents.

DR. RUFUS B. HALL spoke in reference to operation for malignant disease of the ovaries. A patient should be given the chance of their removal, if the tumor is operable. He could cite a number of cases to sustain this assertion, if necessary. A young woman, 20 years of age, was operated on by a distin-

¹ See original article, p. 668.

guished surgeon in Cincinnati some ten years ago, and on one side a solid tumor was removed, it being suspicious in character. A microscopical examination proved that it was malignant, it being of a sarcomatous variety. A very unfavorable prognosis was given to the relatives of the patient. Less than a year ago he operated upon the same patient for the removal of a solid tumor on the opposite side and of the same character pathologically. There are ten years added to the woman's life, and there was no indication of any involvement of any other tissues except the ovary in the second operation.

DR. D. TOD GILLIAM, speaking with reference to drainage, said he has not used a glass drainage tube for three or four years. He seldom resorts to drainage of any kind. He puts in a little gauze occasionally, but this does not drain in the strict sense of the word. He has been much better satisfied since he has discarded drainage tubes than before.

DR. WERDER, in closing the debate, has seen one or two cases of ruptured ovarian cyst that had considerable elevation of temperature, especially at night, due doubtless to absorption of some of the fluid from soiling the peritoneum with it and perhaps on account of it containing some bacteria. He has not, however, noted the fever referred to by Dr. McMurtry. In one case there was elevation of temperature where the fluid was walled off by an adventitious membrane. This was the patient who had a malignant cyst some years afterward. Heretofore he has paid no attention to the contents of these cysts, believing them to be perfectly harmless.

DR. FREDERICK BLUME, of Pittsburg, read a paper entitled

A CASE OF DOUBLE UTERUS AND VAGINA, WITH PREGNANCY
IN ONE HORN; EXCISION BY VAGINAL SECTION.

The election of officers for the ensuing year resulted as follows: *President*—Dr. Edward J. Ill. Newark, N. J. *First Vice-President*—Dr. Edwin Ricketts, Cincinnati, Ohio. *Second Vice-President*—Dr. A. B. Miller, Syracuse, N. Y. *Secretary*—Dr. William Warren Potter, Buffalo, N. Y., re-elected. *Treasurer*—Dr. X. O. Werder, Pittsburg, Pa., re-elected. *Executive Council*—Drs. A. Vander Veer, Lewis S. McMurtry, W. E. B. Davis, John M. Duff, L. H. Dunning, and Walter B. Chase. Indianapolis, Indiana. was selected as the place for holding the next meeting, the time of which was left to the Executive Council.

BRIEF OF CURRENT LITERATURE.

Artificial Dilatation of the Os during Labor.—M. Demelin¹ prefers the bimanual method of Bonnaire to all other methods of dilatation. The index finger of the right hand is first introduced and inserted within the internal os, whose margin it gently presses down by a sort of eccentric massage. The index finger of the left hand is then introduced, and the two together work

slowly and gently, causing the cervical sphincter to yield from fatigue rather than from the result of violence. By degrees the middle finger of the right hand and that of the left, followed by the fourth finger of each hand, may be introduced, and dilatation will then be easily accomplished. The indications for this procedure are: 1. *Faulty insertion of the placenta*. Out of 11 cases the author had no deaths. 2. *Eclampsia, uremia*. If labor has begun and the cervix is partially dilated, the opening may be enlarged by Bonnaire's method and the uterus emptied. If eclampsia occurs during pregnancy, with no sign of labor, we should first try the usual methods (bleeding, chloral, chloroform, purgatives, etc.). The disease may improve under the treatment, or labor may begin, allowing of bimanual dilatation. Should there be no improvement after ten to twelve hours of treatment, it may be well to induce labor by the dilatation. 3. *Apoplectic coma, asphyxia from cardiac disease, etc.* By this method living children may be delivered from a dying mother without the necessity of resorting to Cesarean section. 4. *Fetal complications*. If the fetus be suffering in utero, Bonnaire's method, by the rapidity of the dilatation which it induces, will increase the chances of life for the infant. 5. *Amniotic infection* is a decided indication for dilatation and rapid delivery. 6. *Faulty and dangerous presentations*, as those of the shoulder and forehead. If labor has begun it may be terminated by the bimanual method. This procedure may also be used to dilate the opening when symphyseotomy is to be performed. 7. *Excessive prolongation of labor* in the first stage. Primary and secondary rigidity of the cervix, simple inertia carried to an extreme, uterine inertia in prematurely induced labor, are all indications for dilatation and delivery.

As to the prognosis, out of 49 cases there were 2 deaths: 1 of eclampsia, 1 of cerebral hemorrhage. In conclusion the author states that the bimanual method is most successful after labor has begun. During pregnancy it may be successful, but the process will be of longer duration and require more care. The internal os is the one to be worked upon, and it is very resistant except in the case of dying patients or where there is faulty insertion of the placenta. Other methods used for the rapid induction of labor give less satisfactory results in regard to the life of the child. The mother's welfare is not at all endangered, and any cervical lesions occurring are of slight importance. One rule should be observed—never to extract the child before complete dilatation has been obtained.

External Exploration in Obstetrics.—A. Pinard² thus sums up an article on the subject: 1. External exploration, known as abdominal palpation or external palpation, is one of the most useful methods of examination in obstetrical cases. 2. This method of examination, known from time immemorial, has been employed advantageously only since the early part of this century, but it is really only in about the last twenty years that it has been thoroughly studied and that its methodical application has enabled us to state that it *should be used in*

every case of pregnancy. 3. Easy to teach, easy to learn and to use, abdominal palpation is the best method for the diagnosis of normal or complicated, simple or multiple, uterine or ectopic pregnancies. 4. The diagnosis of such conditions as triple pregnancy, hydrocephalus, etc., has been made possible only by the methodic use of this measure. 5. During pregnancy it in many cases determines the indications for prophylactic and curative measures. 6. During labor, although often valuable, it is less so than internal examination. 7. During delivery of the placenta it is of equal value with internal manœuvres. 8. After labor it should be the only procedure in physiological cases, internal exploration being joined to it only in pathological cases.

Symphyseotomy.—A. Pinard,³ in his early report of the work of the Baudelocque clinic, states that from December 7, 1896, to December 7, 1897, the pelvic brim was temporarily enlarged by symphyseotomy 2 times in primiparæ, 5 times in multiparæ. In one of the latter cases it had been performed once before. 2. In all of the cases the child's head was presenting at the superior strait. 3. Symphyseotomy was performed 6 times upon pelves distorted by rachitis, once upon an oblique oval pelvis. 4. After enlargement of the pelvis the extraction of the child was accomplished 3 times with the aid of forceps, 4 times by version. The final result was 6 living mothers, 1 death, 7 living infants. The patient who died was a primipara at term, suffering from severe albuminuria.

The Rapid Cure of the Incoercible Vomiting of Pregnancy.—Jules Geoffroy,⁴ by applying the method of prolonged palpation of the digestive tract in pregnant women suffering from incoercible vomiting, has found that this vomiting is due to a reflex contracture of the pylorus, the duodenum, and, in especial, the *ileo-pelvic curve* of the colon. Prolonged palpation, which permits us to recognize the condition of hyperesthesia and of contracture, constitutes the best form of treatment. Its action is both sure and rapid. In from one to three short séances it quiets the hyperesthesia and overcomes the contracture. The vomiting stops and cure is complete. The author reports several convincing cases in support of his argument.

REFERENCES.

¹ L'Obstétrique, July 15. ² Pamphlet, G. Steindahl, pub. from Ann. de Gyn. et d'Obst., Oct., 1897. ³ Ann. de Gyn. et d'Obst., April. ⁴ La Clinique, August.

DISEASES OF CHILDREN.

Alopecia, Congenital.—Charles Andry¹ holds that the term should be reserved for those cases in which the absence of hair is primary, essential, and independent of all other lesions. The disease may be either circumscribed or diffuse, extensive or total. He reports cases. The affection is due to defective development and performance of function of the hair bulbs, not to their absence. It is likely to be permanent, and yet it may

improve to the extent that the eyebrows and eyelashes may spontaneously grow in a more or less complete manner. Treatment consists in the administration of some fatty body. Ziegler claims to have obtained results from the administration of thyroid gland.

Bromoform Poisoning.—Müller² observed a case in a boy of 2 years who helped himself to the medicine bottle and drank about six grammes. In a few minutes an exhilarated condition came on. Vomiting was induced, and then the child fell into a deep sleep, broken only by several general convulsions. Cyanosis, slow respiration, and thready pulse developed, and the boy died, about four hours after taking the bromoform, of asphyxia, probably due to the action of the bromoform on the respiratory centre. At the autopsy the stomach and small intestine showed an injected mucous membrane, the blood was unusually thin and the cerebral vessels intensely congested. Chemically, bromoform was demonstrated in the blood, liver, spleen kidneys, and brain.

Constipation, Treatment of Chronic, in Childhood.—Friedman³ divides all cases into two varieties, one of which occurs especially in infants and very young children and is dependent upon errors in feeding. These cases require no treatment except a strict and rational attention to the diet, and yield readily to such care. The second group comprises those cases in older children in whom rachitis, anemia, or general nerve weakness have so enervated the muscular coats of the colon that peristalsis is feeble and insufficient to carry the fecal matter onward. Some mild cases are benefited by diet and hygiene alone, but as a rule this is the kind of constipation in which abdominal massage is of great value, if properly performed and continued for not less than six weeks.

Diphtheria, its Serum Treatment.—Braun⁴ details the results obtained by him with antidiphtheritic serum in a series of small but not mild diphtheria epidemics. Of fifty-four cases only four died. Children injected with serum on the first day of the disease recovered more rapidly than those not treated until the third or fourth day. A number of children of the neighboring peasants received no medical treatment and invariably died. During the past two years it has been the writer's custom to inoculate all the children in the house as soon as he is called to a diphtheria patient, and in this way the spread of the disease has been remarkably controlled. No hygienic precautions whatever are taken by the peasants.

First Hour with the Mother and New-born Baby.—R. Os-good Mason⁵ says that after the mother has been carefully attended to the baby's face should be cleansed with pure, warm sweet oil, and then warm water which has been sterilized or boiled should be used to cleanse the eyes, the water being allowed to run freely over and into them. The mouth and tongue are also to be cleaned with pure water. The cord should next be attended to, and here, according to the author, the technique is usually faulty. By tying the cord at once, while

the circulation is still going on, a bulky mass, consisting of the gelatinous covering which surrounds the vessels, and the contents of the vessels themselves, is confined and left to desiccate and partially decompose before it falls off. His practice is to take up a loop of the cord, six or eight inches from its attachment at the umbilicus, and hold it firmly between the thumb and index finger, compressing the circulation on both sides of the loop. Then he cuts the cord in the loop, and the ends thus formed are still firmly held between the thumb and finger and hemorrhage is perfectly controlled. If the placental end does not bleed he drops it. Loosening the hold upon the umbilical end, he allows the contained blood to escape, and then with a dry towel grasps it firmly and squeezes it thoroughly, pressing out the blood and gelatinous matter, grinding and kneading it, without making traction upon it, until it is reduced to a mere shrivelled string. For safety it should be tied an inch or two from the abdomen and the superfluous portion cut off. Instead of scrubbing the infant, he has it wiped with cheese-cloth dipped in oil. Instead of the usual cumbersome clothes, he has a simple wrapper of ample size made of cheese-cloth, muslin, fine flannel, or China silk, well lined throughout with absorbent cotton lightly tufted to keep it in place. Diaper and a light bellyband are adjusted, and over all the usual soft flannel blanket is wrapped, and the child is dressed. Mothers often continue this dress for their infants several months. Dr. Mason approves of the bandage for the mother as being physiological in its action as a temporary support to relaxed and weakened abdominal muscles. The application to the vulva and perineum of towels wrung out in hot water is most grateful and helpful to the patient. As to the care of the breasts, a gentle and thorough cleansing of the indurated and inflamed breast with tepid water and soap, and the application of a muslin bandage snugly but gently and smoothly from axilla to navel, sufficiently tight to give entire support and gentle pressure to the breasts, elicit such expressions of relief as are not soon forgotten. The milk soon makes its appearance, and a little slit is made in the bandage to liberate the nipple. This procedure, and sometimes the judicious use of a well-covered ice bag, saves nine-tenths of cases which would otherwise result in abscess.

Infantile Hemiplegia, Hereditary.—Placzek⁷ reports a case of cerebral infantile paralysis in a child of 2 years, in whom the paralysis appeared suddenly after an attack of convulsions, unconsciousness, nystagmus, and fever. There was no infectious disease at any time. The father of this child is also the victim of infantile paralysis dating from an attack of scarlet fever in his fourth year. In view of the absence of any tangible cause for the child's condition, the author regards the case as a very interesting example of the hereditary form of cerebral infantile hemiplegia. The little patient's intelligence is apparently not affected, although speech is delayed.

Intestinal Worms.—George Lemoine⁶ treats the *oxyuria vermicularis* by local measures exclusively. For rapid action

he uses an injection of an emulsion of dermatol or naphthalin 1 gramme (15 grains), olive oil 50 grammes (1 ounce 5 drachms). Where slower action is preferred injections of 50 grammes each of glycerin and distilled water may be used, or cod-liver oil 40 grammes (10 drachms), yolk of 1 egg, water 125 grammes (4 ounces 1 drachm). Should this fail, use pure cod-liver oil, which never fails. If the worms are situated in the lower part of the intestine only, anoint the edge of the anus with calomel 0.60 (10 grains), cocoa butter 4 grammes (1 drachm), or introduce a suppository with gray ointment.

For the relief of *ascarides* calomel is the best remedy in young children. It may be associated with other purgatives and anthelmintics, as:

Calomel.. .. .	0.10 to 0.50	2 to 8 grains.
Semen contra, powdered.....	0.50	8 grains.
Rhubarb, powdered.....	0.30	5 " "

In the treatment of *tæniæ*, anthelmintics should not be given unless the parasite has been found in the stools, and, should the treatment fail, it should not be repeated until several months later. The patient should not be subjected to a rigorous diet for several days before the medicine is given; an empty intestine absorbs medicine more readily, and poisoning might result. The patient should go to stool on a vessel filled with tepid water. The worm, upheld by the water, is not so liable to break, and the head is more likely to be expelled; examination is also facilitated. Créquy recommends

Ethereal extract male fern... ..	0.50	8 grains
Calomel	0.05	$\frac{3}{4}$ grain

for one capsule. His method is: 1. To have the patient take only milk for supper on the evening preceding the treatment. 2. In the morning, on an empty stomach, twelve to sixteen of the capsules are taken, one every five minutes or so. 3. If at the end of two or three hours there has been no expulsion of the worm, 60 to 100 grammes (2 ounces to 3 ounces 2 drachms) of the syrup of ether are given, followed by 60 grammes (2 ounces) of castor oil.

Intubation in Private Practice.—Poliewktow^{*} reviews the history of intubation in croup and reports three cases treated in private practice. The children were $3\frac{1}{2}$ years, $3\frac{2}{3}$ years, and 9 months old respectively. All recovered completely and rapidly. Bacteriological examination proved the cases to be true Klebs-Löffler diphtheria, and serum injections were used without any ill effects. The author concludes that intubation can be safely done in private practice, that with the perfected instruments now in use there are few dangers, and that the coincident use of serum injections robs croup of most of its terrorizing features.

Kidney, Embolic Infarction of the.—Bernhard^{*} reports the case of a 4-months-old baby, normal at birth and of good family history, whose umbilicus had suppurated very slightly at the end of the first week of life. The child was very small.

and poorly nourished, there was a loud systolic murmur present, and the heart, liver, and spleen were enlarged. Death occurred very suddenly. At the autopsy the heart was found to be decidedly larger than normal, with small, recent, red, and also older vegetations in both the mitral and tricuspid valves and hypertrophy of the left ventricle. The lungs contained broncho-pneumonic areas, and the left kidney was the seat of an old hemorrhagic infarction of considerable size and partially cicatrized. In the gross specimen this infarct, sharply limited from the remaining kidney substance, strongly resembled a neoplasm, and it was only after careful microscopical study that the true condition was proved. The origin of the embolism was undoubtedly from the endocarditis of the mitral valve, which in turn probably owed its origin to the umbilical suppuratation. That the left kidney is involved rather than the right is explained by the more oblique method of union between the left renal artery and the aorta.

Measles, Pathology of.—Förster⁹ places on record cases illustrating three complications of measles: (a) pemphigus; (b) extensive general emphysema; and (c) cardiac thrombosis and embolism. (a) Two cases are cited, the pemphigus beginning almost spontaneously with the measles prodromata, with new blebs appearing while the measles exanthem was at its height and declining. Neither eruption modified the other in form, time, or variety of appearance. The author is of the opinion that children who have measles, or are in its incubation stage, are possessed of a special predisposition toward the pemphigus contagium. (b) Of the three cases reported two died; the other recovered. All had extensive subcutaneous emphysema over the chest and neck and in both lungs. Only four similar cases have been reported hitherto, and of these the author's are the only ones which were uncomplicated by pertussis or tuberculosis. The three children were in their second year. (c) Two cases are described. In one double pneumonia complicated the measles, and on the thirty-second day right-sided hemiplegia developed suddenly, followed by death in twenty-four hours. An embolus was found in the left internal carotid artery, with complete occlusion of the anterior choroidal artery. The clot originated from a thrombus in the left ventricle. In the second case the embolism occurred in the central ganglia and originated from a thrombus in the right ventricle.

Metrorrhagia in Young Girls.—M. Veyrières¹⁰ reports two cases. The first was a little girl of 12 years, in whom menstruation had occurred unaccompanied by pain or fatigue, but, instead of stopping normally, continued uninterruptedly for several months. The patient was sent to the baths at La Bourboule, where the author saw her and prescribed a daily bath of the temperature of from 36° to 41° C. (96.8° to 105.8° F.) for twenty minutes, and the daily drinking of a small amount of the water. At the end of six days the flow had completely stopped, to reappear in a normal manner ten days later. For the two years which have since elapsed the menses have oc-

curred regularly, and there has been no return of the metrorrhagia. The second patient was 16 years of age, and in her case the removal of a slight lipoma of the cervix had been tried for the relief of the metrorrhagia, but without success. The same treatment as in the first case produced like results, but lack of information prevents knowledge as to the persistence of the cure. M. Du Castel likewise reports the success of hyperthermic baths in a case of metrorrhagia in which all other measures attempted had failed. The author does not attempt to account for the success of the baths. The only precautions to be observed are to have the bath-room well ventilated, to have the patient sit down as soon as she leaves the bath, and lie down for a half-hour, as a hot bath whose heat is constantly increased is almost always followed by profuse perspiration.

Noma, Diphtheritic; Serum Treatment; Cure.—Frey-muth¹¹ and Petruschky have studied a case in a boy, 8 years old, who came under observation in the fifth week of a typhoid fever attack. Stomatitis developed and was diagnosed as noma. Cultures demonstrated the presence of the diphtheria bacillus. Serum injections were given until ninety-five hundred units had been administered. The right side of the mouth and cheek only were affected. During four days the gangrene spread, and the boy's condition was desperate. Then the local process gradually stopped and the general health improved. When quite well a plastic operation will be necessary to restore the gum and lip, which were destroyed. The bacteriological examination showed that the Klebs-Löffler bacillus was present, together with a number of mouth saprophytes. The diphtheria bacilli, injected into two guinea-pigs, did not cause the death of the animals.

Noma.—Schmidt⁹ reviews the literature and adds a case which occurred in a boy 7 years old who had a mild attack of scarlet fever, followed by nephritis and noma involving both cheeks, both lips, gums, and the anterior portion of the tongue. Death occurred in collapse eighteen days after the noma began. At the autopsy catarrhal pneumonia and chronic hemorrhagic nephritis were found. Bacteriological studies made during life and at the autopsy resulted in the finding of a short, fine bacillus and a long, slightly wavy one. These bacteria it was impossible to cultivate; but on implantation of a piece of the gangrenous tissue in a rabbit the animal died and the bacilli (not the threads) were recovered from the spleen and point of inoculation. No bacteria of any kind were found in any one of the child's viscera.

Onanism in Childhood.—Schmuckler⁸ believes that heredity plays a part in the etiology of this condition, in that the children of masturbators are born with weakened nerves and are therefore predisposed to onanism. Errors in diet, clothing, habits, and amusements contribute markedly to the development of the practice, while the example of older children or companions may be the exciting cause. He concludes, there-

fore, that onanism is spread as much at home as in school; that it is advisable to establish an obligatory course in child hygiene for women in the high schools; that competent physicians should be employed to attend the schools, and that these should have a full vote in the managing board; and, finally, that it is advisable to discuss, recognize, and meet this condition rationally in all associations of parents, teachers, and educators.

Orthodontia.—Edmond Rosenthal¹² says that of the thirty-two permanent teeth, twelve appear without having been preceded by milk teeth. The four to appear first are the molars, which come behind the row of milk teeth, which are still *in situ*. Many persons confound them with the milk teeth, and from the ignorance or prejudice which occasions neglect of the milk teeth these molars often become so affected by caries that extraction is the only treatment possible. Between these four first molars occurs the development of the second dentition, and this cannot take place properly unless there be space enough for ten teeth above and below. If, as the result of premature extractions of milk teeth, these molars approach each other too closely, the distance separating them will not allow of the normal development of ten teeth, and irregularities will be produced. The teeth will overlap each other; not only that, but if many of the temporary teeth have been removed the jaws may approach each other too closely during mastication, and the lower teeth as they come will push against the upper ones, in time causing projection of the upper lip. It will be seen from the above how necessary it is to be properly careful of the milk teeth. Irregularity of the teeth is also produced by such vicious habits as sucking the thumb, or a sweetened cloth, or the lips or tongue, which deforms the yielding alveolar process. Other irregularities in the growth of the teeth are due to heredity and to functional disorders due to a pathological condition of the pharynx and of the nasal fossæ. It is not unusual to find certain irregularities in the number and position of the teeth in different members of the same family and in several generations. Buccal respiration, by holding the mouth open, tends to cause narrowing of the jaws; and the pressure of the column of inspired and expired air upon the palatine arch, which is not counterbalanced by an equivalent pressure in the nasal fossæ, favors greater arching of the floor of the nostrils. Should the child be suffering from nasal obstruction due to vegetations, polypi, or chronic catarrh, the condition must be removed before orthodontic treatment is undertaken. There are two methods of treatment for the correction of crowding of the teeth, the first consisting in the use of apparatus, the second in the extraction of teeth to make room. Treatment should be begun early if the child is in good health and intelligent enough to follow given directions. Faulty digestion is often overcome by proper attention to the condition of the teeth, and defective pronunciation is frequently cured by the same means.

Purpura Hemorrhagica in Infancy, Etiology of.—Et-

linger^{*} describes the clinical picture of Werlhof's disease in detail, and gives its history, differential diagnosis, and treatment, referring to the literature of the subject. Finally he reports the case of a male foundling who died at the age of two months. When first seen, at the age of one week, the baby had acute intestinal catarrh, icterus, mild conjunctivitis, and suppurative of the umbilicus. While there was a slight gain in weight, there was none in strength; bronchitis developed, and three days before death hemorrhagic spots of small size were noticed upon the feet, buttocks, and arms, spreading later to the thighs, wrists, back, chest, and abdomen. On the day of death they also appeared on the gums and palate. There were never any hemorrhages from the gastro-intestinal tract. At the autopsy were found edema of the pia mater, left suppurative otitis media, diffuse bronchitis and edema, and parenchymatous nephritis. Among 188 cases collected 28 were under 1 year of age, 20 between 1 and 3 years, and the remainder between 3 and 15 years. The male sex predominated throughout.

Pyothorax, Fever following Operations for.—Augustus Caillé¹³ discusses the significance of this condition, illustrating his paper by many charts and cases, his article being based upon the study of about 300 cases. A completely afebrile course, he says, is exceptional, and where it occurs the case is not of long standing, the pus is localized by adhesions, and the healing process is a rapid one. Instances of a rise of temperature from intoxication with iodoform or carbolic acid are not rare. Carbolic acid produces the well-known smoky urine with some fever. The toxic effects of iodoform are fever, nausea, or vomiting, and frequently a scarlatiniform rash, all symptoms disappearing when the drug is no longer used. Retention of urine may cause a fever temperature; so may constipation. Secondary and extrathoracic abscesses as a cause of fever are frequently met with, the author's list including small and large abscesses developing in axilla, buttocks, groin, parotid gland, also extrapleural abscesses and otitis media. In another group of cases convalescence is disturbed by a distinct specific infection or contagion, such as measles, scarlatina, erysipelas, diphtheria, and specific vulvo-vaginitis. In another class of cases there is but a slight remission of fever after operation, and there may be an extension of the inflammatory process to the other side of the chest or to the pericardium or peritoneum, or concomitant lobar, broncho- or tuberculous pneumonia. Their diagnosis is by no means easy. To distinguish a broncho-pneumonia from a general pulmonary tuberculosis by physical signs and symptoms, in the absence of bacillary proof, is rarely possible. A pulmonary miliary tuberculosis may be suspected from the high septic temperature, rapid breathing, diarrhea, and loss of weight. In cases of tuberculosis of the lung with pulmonary abscess of long standing, with subsequent formation of an empyema, there is usually no satisfactory drop of temperature after operation; and in chronic empyema with a localized abscess cavity

and insufficient expansion of the lung in consequence of adhesions, an afebrile course may persist for a long time if drainage is sufficient, but finally the pus microbe will infect other organs—the kidney and intestines. Another variety of pyothorax cases may be termed the acute septic, and is frequently met with in young children. Such patients rarely recover. Tubercular and cocci meningitis is occasionally met with as complicating pyothorax. The most important class of cases from the practical standpoint is that in which, after operation, thorough drainage, and no appreciable complications, the irregular septic temperature persists, is due to deep seated multilocular accumulation of pus or abscesses not reached by the primary operation. Not a few such cases have come under the writer's notice, some in which the condition was recognized at the time of operation, and a few in which, after operation, notwithstanding good drainage and no complications, and fair general conditions, the temperature would rise to 103° and 104° at irregular intervals. Certain cases do quite well for two or three weeks after operation, and then show an irregular rise in temperature. The discharge from the tube has almost ceased and no complications can be detected. In these cases, if the tube is removed and the patient taken out of doors in spite of the fever, there is rapid recovery. The probability is that such temperatures are occasioned by what is understood to be the result of absorption of inflammatory products. The drainage tube is a source of irritation and should be removed.

The rise of temperature in pyothorax may mean very little, but it always indicates something which we should endeavor to locate and correct.

Spina Bifida, Value of Röntgen Rays in.—Beck¹⁴ has used the Röntgen rays to determine the variety of spina bifida present—whether purely cystic without spinal cord involvement, or whether a myelomeningocele or a myelocystocele. Finally, the skiagram would prove of value in those rare cases in which a lipoma or a fibromyolipoma cannot be distinguished from a spina bifida. The case from which the pictures (shown in the article) were taken was operated upon and recovered.

Stridor, Inspiratory, of Nurslings—what is the so-called Typical?—Avellis¹⁵ describes the clinical history of a typical case in which the stridor began when the baby was 2 weeks old, and was constant, with exacerbations, without cyanosis, rachitis, or convulsions, without fever, cough, or hoarseness, no visible lesion in the larynx, and excellent general condition. Four such cases were observed, and the author came to the conclusion that they are due to a tracheal stenosis caused by a large thymus gland. This theory was borne out by three facts: A case operated upon by Rehn, resulting in recovery after removal of the thymus; a case cured by partial removal of the gland by König; and a case demonstrated at autopsy by Glöckler and Weigert. The condition may be called tracheostenosis thymica; must be differentiated from hyperplasia of the bronchial lymph nodes, and may be treated rationally with

thyroid extract. It has not yet been determined whether this treatment causes earlier relief than the spontaneous cure, which usually results in from six to fourteen months.

Tannopin, Action of.—Joachim¹⁶ concludes that this drug, which is a condensation product of tannin and urotropin, can be given to the youngest nurslings without any ill effects resulting, for its decomposition into its elements proceeds but very slowly in the intestine. The remedy is of very great value in all cases of enteritis, but is not so good in the tuberculous form of intestinal inflammation. It should be continued in very small doses for several days after the intestine is apparently in normal working order again.

The Period Preceding Puberty.—This period in the life of children, according to Armand Delpuech,¹⁷ has received too little attention, all the stress having been placed upon the period of puberty itself. Yet it is of importance and merits close study. The characteristics of the child's constitution at this time may be summed up in these propositions: In the years preceding puberty there is a brusque and rapid growth in height, due mainly to a lengthening of the lower limbs. This period is the time of life in which *the trunk is relatively the shortest*; it is also the time in which *the thorax is the narrowest*. The author submits tables of measurements to prove these points. This period of growth is most observable from 12 to 14 years of age in girls, from 14 to 17 in boys. As to the growth of the internal organs, full and sufficient data are lacking. We know absolutely nothing in regard to the brain. From a few statistics we may gather that the small intestines are shorter than they were in infancy and than they will be in adult life. As to the lungs, vital capacity is of somewhat slower growth between 13 and 14 years, and more rapid between 15 and 16. The heart gradually increases in size up to the age of 11, when it stops growing, and then at the age of 16 suddenly and rapidly increases in size again. Similar researches in anthropometry may eventually give the answer to certain puzzling questions in pathology, such as: whence come the cephalalgias and epilepsy of growth? what is the cardiac hypertrophy of youth? what the characteristics of a tuberculous predisposition? why does scoliosis develop in late childhood, and chiefly in girls? The hygiene of childhood should also be benefited by such researches, and the true reasons found for exercise and the various precepts and practices of education. Practical experience, indeed, appears to have divined the needs of childhood without waiting for advice from anthropologists, as evidenced by the fact that we endeavor to prevent children from indulging in violent exercise which would exhaust muscles in a formative period and over-excite a small and weak heart; from long standing and walking which would tend to bend and curve a vertebral column whose solidity is not as yet assured. Young people are best left to their natural desire for motion, which is held in check by the fear of fatigue, and to their great thirst for fresh air, which is not only

the best stimulant of their vital functions, but which also compensates and corrects before obliterating the greatest defect of the childish constitution—namely, the small size of the thorax.

Thymus, Enlarged, causing Sudden Death by Compression of the Trachea.—Lange¹ reports the case of a female baby 3½ months old, bottle-fed, with craniotabes and mild gastro-intestinal disturbance, who was found dead in the morning, three hours after she had cried heartily and been fed. There was marked cyanosis, and froth issued from the nose and mouth. At the autopsy the thymus was found markedly enlarged, compressing but not occluding the trachea at a point three centimetres above its bifurcation. The lungs were hyperemic and over-distended with air; there was no other anatomical change in any of the viscera. The thymus weighed 22.5 grammes. The sudden death in this particular case is undoubtedly explained by the fact that the trachea, which had for some time been undergoing flattening by pressure, became acutely stenosed through acute swelling of the thymus and sudden change of position of the child's neck. Three similar cases have been reported.

Urine, Retention of, in a Nursling.—Schürenberg's² case was that of an 8-months-old baby girl, rachitic, whose illness he diagnosed clinically as chronic enteritis and nephritis with sepsis and catarrhal pneumonia. There was much edema, and the urine contained granular casts and leucocytes. The autopsy showed the presence of a catarrhal pneumonia, ulcerated enteritis, chronic nephritis with double pyonephrosis and a right-sided hydronephrosis, with a second, thin ureter in addition to a large, dilated, and tortuous main ureter. The bladder was greatly dilated, its mucous membrane covered with muco-pus, and just behind the urethral opening was a tumor, 1.2 by 1.5 by 0.5 centimetres, evidently occluding this opening when the bladder was full. The ureters opened immediately behind the tumor. Microscopical examination proved the tumor to be a proliferation cyst, originating in an adenoma arising from misplaced glands of Skene, normally present in the urethra. The hydronephrosis resulted from the obstruction to the outflow of urine from the bladder, owing to pressure by the tumor.

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AND
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ORIGINAL COMMUNICATIONS.

WHAT HAVE YOU TO OFFER THAT IS BETTER?
A QUESTION FOR CRITICS.¹

BY

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“CONSERVATISM” in medicine and surgery, especially gynecological surgery, has been a favorite theme with many writers during the past few years. Nearly every new operative procedure has been condemned by these gentlemen, who, unfortunately for themselves and progressive medicine, have failed to provide a substitute for that which they oppose. Consequently progressive men, advanced thinkers in the profession, have ignored the captious criticisms aimed at their work and by success answered their critics. It has ever been thus, however, in medical and surgical progress. Every effort to move forward has met obstacles which should never have been placed in the way. It is only necessary to advert to a few of these matters.

When Ambroise Paré revived the use of the ligature to arrest

¹ The address of the President, delivered before the Washington Obstetrical and Gynecological Society, October 7, 1898

hemorrhage from bleeding vessels caused by gunshot wounds, he was heartily denounced for his so-called temerity; yet when success demonstrated the correctness of his practice it was not long before the owners of cautery irons and hot-oil pots hastened to hide them and tried to get front seats on the car of progress which they had vainly tried to throw off the track. Vaccination is another example, and some minds are still so much beclouded that they oppose this beneficent procedure with an energy which, if properly directed, would be of some benefit to humanity. The operation of ovariectomy was condemned in a manner which made out McDowell and other pioneers to be little better than open-handed murderers. And yet what benefits have resulted to humanity from these wonderful works!

Some of the greatest advances in surgery may be stated as follows: Revival of the ligature by Ambroise Paré; the discovery of anesthetics; the systematic use of antiseptics by Lister, which resulted in the enforcement of strict asepsis in surgical work; the invention of the hemostatic forceps. The first did away with boiling oil and hot irons to arrest hemorrhage. The second abolished pain. The third banished dirt and germs. The fourth makes surgical operations practically bloodless, and the saving of time is a logical sequence.

"Conservatism" in surgery or medicine is a misnomer. Radicalism is conservatism. If there is anything about which we must be radical it is the removal of disease. To partially remove disease is to insure its return. I take it for granted that every man who performs a surgical operation aims to remove only so much tissue as will secure the thorough eradication of disease. No one will amputate the arm at the shoulder for the cure of a diseased finger nail. That would be malpractice. Nor would a surgeon remove the uterus for disease of the vulva. But there would be no conservatism in removing a cervix uteri for cancer and leaving the remainder of the uterus which has malignant disease at its fundus. The language of Joseph Price expresses the sentiment which should influence every surgeon in his work. He says¹: "The aim and effort should always be to bring the patient into as normal a condition as possible and make very improbable the necessity for a repeated operation." And again: "Complete work offers the best chance for complete recovery in about all cases." While these statements were made to fit the subject he was discussing,

¹ THE AMERICAN JOURNAL OF OBSTETRICS, May, 1898, p. 592.

they are nevertheless applicable to all other surgical and medical matters.

The fact that some surgical operations have been done which might better have been left undone, so far as benefit to the existing state of affairs was concerned, may safely be admitted. This is illustrated by Battey's operation, which has been a toothsome morsel for critics and is still harped upon as a procedure which should be mentioned only to be condemned. Yet, in the light of the present day, no surgical operation has been productive of more beneficent results than this much-abused act. The charge of mutilation is true only in a given sense; and yet when we remember that women who were subjected to this *experiment* (?) had received treatment from the most distinguished men in the profession and no good had resulted therefrom, we are justified in saying the effort to relieve them in the manner indicated was commendable. In a great many cases the patients were made worse than they were before being operated upon; but the paramount, overwhelming fact was established that the abdominal cavity might be opened almost with impunity, and it was not long before general surgeons were following gynecologists in opening the abdomen for the diagnosis and treatment of diseases which before that time had been deemed irremediable. Thus, through the sacrifice of a few ovaries in women who were of no good to themselves because of their unrelieved ailments, thousands have been saved through timely operations by skilled operators, whose lives would have been lost had it not been for the assurance of successful work through the information and experience gained in the efforts to secure good results by operating on ovaries, believed to be the offenders, by the pioneers in gynecological surgery. Though we now believe that but a few cases of nervous disease are relieved by the removal of ovaries which show neither macroscopic nor microscopic evidence of disease, he must indeed be blind who fails to see the overwhelming good which has resulted from—we will say—the mistakes of early operators in this field. It may well be doubted if an unpremeditated evil has, under any circumstances, resulted in so much good as in this instance. Still there are some who fail to take this view and keep on nagging at the early operators regardless of the good results which are visible. Thus a correspondent of the *Journal of the American Medical Association*¹ makes the following observations:

¹ April 16, 1898, p. 926.

“Unfortunately for humanity, we, as physicians and surgeons, are not exempt from these periodic impulses, during the prevalence of which we lose our heads and resort to lines of practice which are contrary both to science and to sound judgment. One of the worst epidemic manias that ever struck the medical world began about a decade and a half ago in Europe and spread rapidly until it affected the profession of two continents. Abdominal surgery had just opened up a new field. The peritoneal cavity, which a few years before was a *terra incognita*, was invaded on all sides and by nearly everybody. The ovary was the point of attack. If not really diseased, it was accused of being the focus from which originated all the nervous phenomena to which that neurotic specimen of humanity—woman—was addicted. In their onslaught upon this organ men vied with each other to see which could make the largest record, and then the foremost man in the contest, like the fastest horse on the trotting course, tried to beat his own record. Things went on in this reckless manner for half a score of years, and then men began to regain their reason and only removed these important organs when they were seriously diseased.” These statements exaggerate the extent of the mischief to a very great degree, and yet they harmonize with those of many others who see evil, and nothing but evil, in the work which was done by conscientious workers in an unworked field. It will be observed that the writer quoted does not, nor do others who criticise, indicate the substitutive operation or treatment which should have been pursued in place of that which was done. The criticism is *post hoc* and, as usual in such matters, not commendable.

The contention, then, has been that practitioners have been too prone to adopt radical surgical measures and have thereby unnecessarily endangered the lives of patients. One of these operations, hysterectomy for fibroids, was especially denounced. In a discussion in this Society nine years ago, our esteemed associate, Dr. Joseph Taber Johnson, speaking on the treatment of uterine fibroids, advocated the resort to hysterectomy in suitable cases. Conceding that the danger from the operation was great, he uttered words of wisdom, which have rung in my ears ever since, when he added, “but her danger is also great,” referring to the risk run by the woman who continues to carry her fibroid. He said the mortality was about forty per cent in cases operated upon. Now, thanks to the skill and experience of surgeons, the mortality is so small relatively

that it may be safely asserted that the woman who holds on to her tumor is in more danger than her sister experiences in submitting to the operation of hysterectomy. In other words, the mortality is less in cases operated upon than in those who do not submit to the operation. Now that this fact has been established, we are met by the charge that women are being mutilated by surgeons who perform hysterectomy. In all seriousness it may be asked, which is the greater mutilation, that done by the surgeon in removing a useless organ, made so by an excrescence, or that done by—well, say *Nature*, in causing the deformity? And in this connection I ask the critics what they have to offer that is better than the treatment pursued by the surgeon. All other methods of treatment have failed. Ergot is no longer used; it does no good. Electricity is a lamentable failure. Myomectomy is only suited to certain cases.

The opinion I venture to express is that we wait too long before resorting to hysterectomy. When a fibroid of the uterus has attained a size that enables a woman to realize its presence, and having in mind the facts that removal of the ovaries or tying the uterine arteries will arrest its growth only occasionally; that ergot will have no effect for good; that electricity cannot be relied upon to retard the increase in size or cause the disappearance of the tumor; that dangerous adhesions and complications result as the fibroid enlarges; and, finally, that the woman is living in constant dread of some catastrophe which there is sound evidence to believe is well founded—why should not the surgeon make early hysterectomy the operation of election instead of waiting for it to become one of necessity? There is danger to the woman which is constantly increasing while the fibroid remains. Conceding, for the sake of argument, that some of the measures referred to may arrest the further development of a fibroid, the fact still remains that the woman is not cured, for the tumor is there to start into new life, if opportunity offers, and to undergo suppurative or malignant degeneration. How will the opponents of this operation relieve the patient of this menace to life, health, and comfort? With our present resources, nothing short of radical measures will accomplish the desired end. I do not understand the meaning of “conservatism” when used in this connection, nor can I see a place for such a term.

There are other affections in which radical measures, promptly applied, have changed the results in a marvellous

degree. Unavoidable abortion was formerly treated by being let alone, or, worse, by tamponing the vagina with an *old* silk handkerchief until the embryo was willing to come of itself. Septicemia was of common occurrence. The present treatment is to promptly dilate the cervix, the patient being anesthetized, and clear out the uterus. Asepsis and antisepsis do the rest. Extrauterine pregnancy, when discovered before rupture, is promptly terminated by surgical means. We no longer regard the use of electricity or any other agent as wise or proper treatment in this form of trouble. The removal of pus tubes, and the uterus with them if deemed necessary, is now regarded as the right procedure. To talk of "unsexing" a woman under such circumstances is sheer nonsense. She is already unsexed and her life is in imminent danger, while her health has already departed and can only be restored by ridding her of the cause which has brought about her diseased condition. Would it be "conservatism" to puncture the pus tubes and let the pus run—where? "Radicalism" in these cases means doing what is necessary to be done in the removal of the disease which is surely taking the woman to her grave. If you can relieve her by vaginal incision and drainage, that is what it is your duty to do, but bear in mind that that is not "conservatism." When the disease is eradicated totally the treatment has been radical, while anything short of that means failure.

Reference might be made to other "impulses" to inaugurate "epidemic manias," for relieving the suffering incident to lacerations of the cervix by Emmet's operation, and to the various operations for correcting uterine displacements by such procedures as Alexander's operation, ventral and vaginal fixation, etc. All cases of laceration of the cervix or displacement of the uterus do not necessarily require a surgical operation, but, when these conditions become the source of suffering which simple means fail to relieve, nothing short of the surgeon's work will give that permanent relief to which the afflicted woman is entitled when she places herself in our hands for treatment.

In conclusion I may say that the surgeon who performs an operation for the relief of the affections which have been cited, and others which might have been, is entitled to just and fair treatment in the matter of criticising his work. I believe he never removes more than he thinks the case demands, and that he is a better judge of the necessities of the case than the critic

who sits at his desk and shoots his arrows regardless of the harm they may do. The faultfinder is too often an obstacle in the way of progress. He does nothing himself, and does not want any one else to do that which advances scientific medicine and surgery, unless it be along the lines which fail to commend themselves to progressive men. In medicine and surgery *progress* has "the right of way," and he who would impede its advance will be inevitably sidetracked.

Permit me, then, to say to those who find pleasure in disparaging the work of others by unfriendly criticism: When you have concluded your strictures on the operations devised and practised by faithful men, be honest enough to tell us in the way of treatment what you have to offer that is better.

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THE COMBINED TRENDELENBURG-WALCHER POSTURE IN OBSTETRIC OPERATING.

WITH NOTES ON OTHER POSTURES.

BY

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(With twenty-three illustrations.)

A COMBINATION of two well-known operating positions, the Walcher and the Trendelenburg, enables one to effect results impossible with either alone. In the absence of an operating table the posture is readily improvised by using a chair without rungs between its back legs for an inclined plane, and preventing the patient from slipping by means of a sheet passing over the patient's shoulders behind the neck, the ends tied to each rear leg of the chair. The buttocks project beyond the back of the seat, the patient's legs are spread wide and dropped backward, free access to the birth canal is secured, level traction with forceps is facilitated, and the uterus is in a partial upside-down position, greatly expediting version, reposition of the prolapsed cord, and other manipulations.

Description of the Position.—In deliveries in maternities the patient is placed on the Trendelenburg incline and slid upward till she balances on her sacrum, the legs hanging over. In obstetric work in private practice the patient is readily pre-

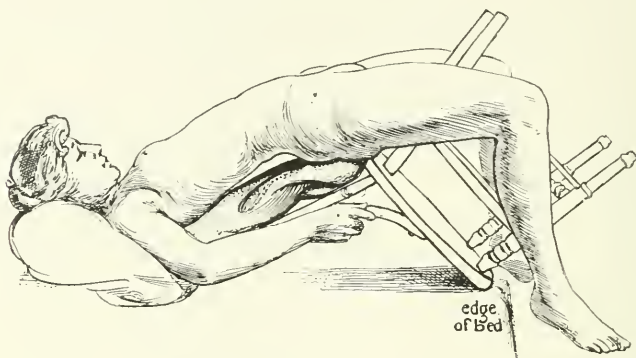


FIG. 1.—The arched dorsal, "Italian," or combined Trendelenburg-Walcher posture on chair turned upside-down.

pared in the following manner: A plain wooden chair which has a flat back and no rungs between the rear legs is selected. Or one steps on the back rung and breaks it out. The chair is then placed on its face across the foot of the bed, the back

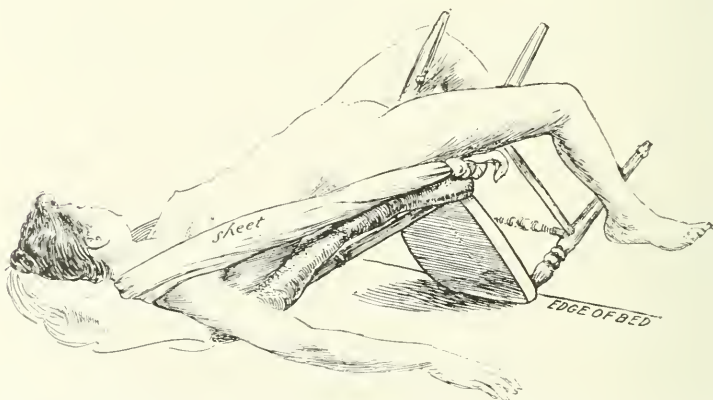


FIG. 2.—Arched dorsal position with sheet in place to prevent slipping. The legs are swung outside the chair.

forming the incline for the Trendelenburg position. A blanket or double sheet is laid along the chair back and may fall over the chair bottom. If it is at hand a Kelly pad may be placed at the angle of the junction of chair back and chair seat, with

its apron hanging down toward the floor. A sheet is then rolled on the bias to form a loose, long rope, and an end of the rope is tied to one upturned rear chair leg at its junction with the chair seat. After anesthesia is complete, the patient is seized by the knees by one assistant and by the shoulders by another and is slid up the inclined plane, as in the ordinary use of a chair for the Trendelenburg posture. Care is taken that the buttocks rest on the upturned back edge of the chair seat, and that they project a little beyond the chair seat toward the operator, so as to give him unimpeded access to the introitus between the rear chair legs. While the operator holds up the patient at this height the assistant slips the loose end of the sheet behind the patient's neck, passing in front of the shoulders; then he draws out all the slack and makes fast this free end to the rear leg of the chair on the opposite side. There is no constriction of the neck by this thick, loosely-rolled sheet. The patient is readily held in place. Now each knee is grasped and the legs swung outward until the thighs hang outside of the upturned chair legs. The weight of the lower limbs causes them to drop toward the floor with the knee lower than the hip. Should the chair be too wide to give the complete Walcher position with marked extension at the hip joint, a rolled sheet or other pad is slid up under the sacrum.

Operation.—The patient is now firmly fixed in a position very advantageous for any operative procedure, especially for such as require a relaxed uterus; the vulva is at a convenient height for the standing operator; the direction of the canal formed by the vagina and the cervix, which leads into the uterine cavity, is more direct and more nearly level than that in any other posture, as will be subsequently shown. The brim of the pelvis is enlarged to its utmost anterior-posterior diameter by the Walcher posture, and instead of being in a location difficult and almost impossible of access, as far as easy manipulative measures go, it is straight in front of the operator. If the patient is exhausted she is in a favorable attitude, which is not true of the ordinary Walcher posture.

In addition to these conveniences the position possesses many of the advantages of the knee-chest posture, while it readily permits anesthesia—an important measure inadmissible in the latter attitude, except on the operating table of a maternity. The posture stands us in stead either for version, prolapse of the cord, high manual rotation of an occipito-posterior to an occipito-anterior position, flexion of a brow presentation, cor-

rection of a face presentation (especially in the cases where the chin is to the rear), or in those laparatomies wherein free access to the vagina is desirable, such as those performed for ruptured uterus or in Cesarean section.

For gynecological work I have planned a table which will embody the principle of a gap, permitting access to the vulva between the knees. Wherever, in laparotomy, the vaginal fornix has to be opened and gauze drawn into the vagina, we have all noted the discomfort and the unsafe contacts on the ordinary Trendelenburg table.

It is possible that for tenement-house symphyseotomy we shall find some advantage in this position as compared with



FIG. 3.—The birth canal in the arched dorsal posture. It is more nearly straight and level, and the body of the uterus is more accessible than in any other posture.

the operation on the level table. In such case it would be dangerous, of course, to allow the legs free motion, and it would be necessary to tie them to the chair legs.

Example.—One of the several instances of the utility of this method may be given. I was called to see a vigorous Swede who had been delivered of a six-pound twin at 5 in the morning, the pains being efficient, the vertex presenting, and the process not difficult. The second child, which was larger, was at once driven down into the pelvis by the strongly contracting uterus, in transverse presentation, the left arm presenting, the dorsum in front. At 10 o'clock I found a very firmly im-

pacted shoulder, an excessively thin lower segment, a well-marked retraction ring exactly at the navel, and the child not living. Drs. Hartt and Bennett had faithfully tried to turn, first in the knee-chest position, and then, under complete chloroform relaxation, on the back, but so continuous was the uterine contraction, and so firmly driven down was the child, that it was impossible. The catheter drew a drachm of blood. I placed the patient in the Trendelenburg-Walcher posture, after completely anesthetizing her; I got ready for embryotomy, and

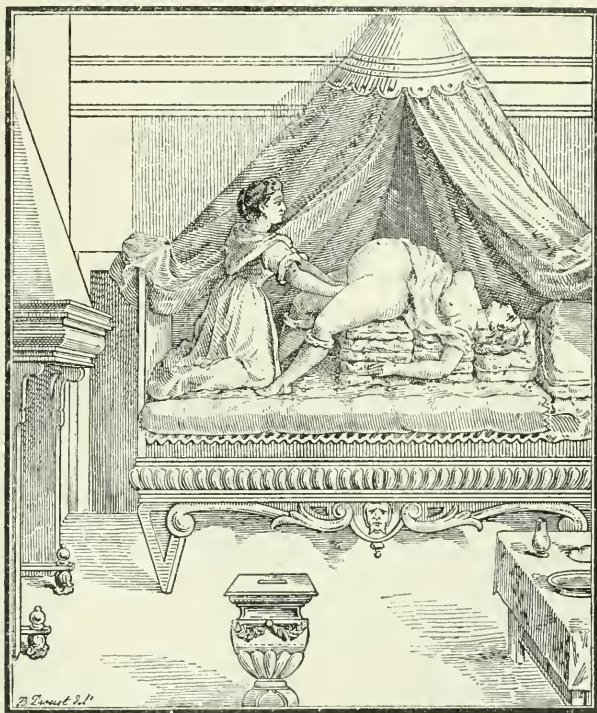


FIG. 4.—The same posture, from a print in Scipio Mercurio's book for midwives, 1601. It is therein styled the Italian position.

also to operate for rupture, for the thinning of lower uterine segment and vagina was beyond anything I have ever seen, and the child had been impacted for five hours deep in the pelvis. By very gentle manipulation I was able, owing to the relaxation produced by chloroform, plus this position of the uterus, to do a podalic version in ten minutes, operating during the intervals of vigorous contractions. After delivering the seven-pound child I immediately cleaned out the uterus, which

was of an hour-glass shape, not removing my hand from within the uterus until firm contraction had taken place after douching. Between inner and outer hands I was able to clearly demonstrate that not only was the retraction ring at the height of the navel, but that the lower uterine segment was so short that after delivery the space between retraction ring and external os covered less than the length of the body of the third lumbar vertebra and the upper half of the fourth. The vagina, then, was thinned and stretched during those five hours to the second lumbar vertebra. There can be no doubt that without all favoring aids version under these conditions would have produced an extensive rupture. Leakage of urine into the vagina ceased in a few days.

Comparison with Other Positions.—Will you permit me to compare this position with a few others and to say something about pelvic inclinations and readiness of access in the other positions, with a word about a straightened birth canal? With the patient in the upright position, Naegele has given us the angle between the true conjugate and the horizon as between 55° and 60° . Meyer showed that the degree of pelvic inclination in the upright position not only differs in individuals, but is also affected by the relative position of the lower limbs. With the knees touching, or during marked abduction and out-rotation, there is increase of pelvic inclination; it is at its least during moderate abduction and slight in-rotation. "The size of the angle between the conjugate and horizon," says Kaltenbach, "may be of diagnostic importance in drawing our attention to certain pelvic anomalies. Moreover, an alteration in the axis of the uterus and of the fetus often depends on the altered direction of the plane of the inlet."¹

It is also to be noted that all these relations change by very simple alterations of position, and therefore the influence of pelvic inclination on the course of labor is distinctly lessened. It was formerly overestimated. But it is important to the obstetrician to clearly understand how the direction of the plane of the inlet is altered by various positions of the body and by what methods these may be influenced.

The comparison is most readily made with diagrams, the text being appended.

Dorsal Posture with Horizontal Legs.—In this position the angle of the inlet to the horizon is 30° .

¹Hegar-Kaltenbach: "Operative Geburtshülfe," Stuttgart, Enke, 1897, pp. 13 to 33. Good summary.

Dorsal Posture, Flexed Thigh and Leg, Feet on Table.—With the knees strongly flexed and the heels close to the buttocks and the knees drawn moderately far apart, the angle

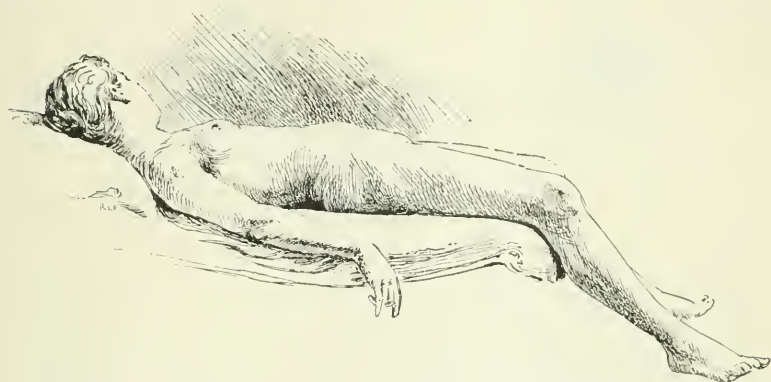


FIG. 5.—Straight dorsal posture—thighs extended. Even here the lumbar arching is increased.

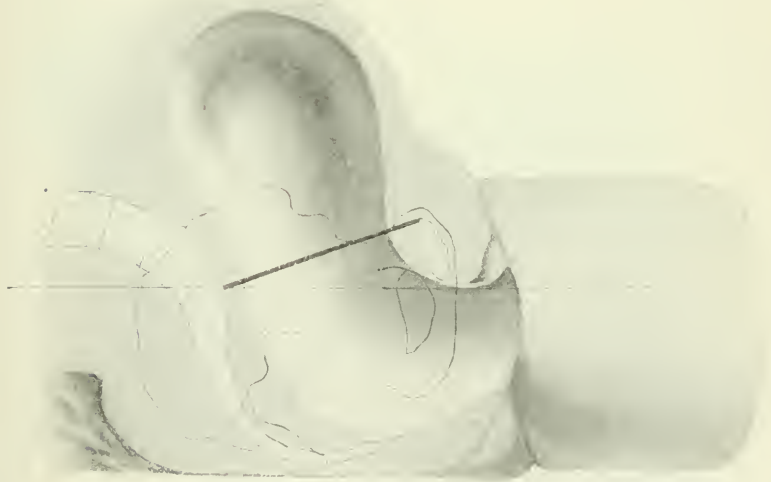


FIG. 6.—Dorsal posture with extended thighs. The black line indicates the conjugate of the inlet.

between the true conjugate and the horizon in front, or beneath, is 40° .

The vagina from hymen to fornix will trend downward, being nearly at right angles with the long axis of the uterus;

but depression of the perineum by the introduction of the hand will give an angle between the lower part of the birth canal

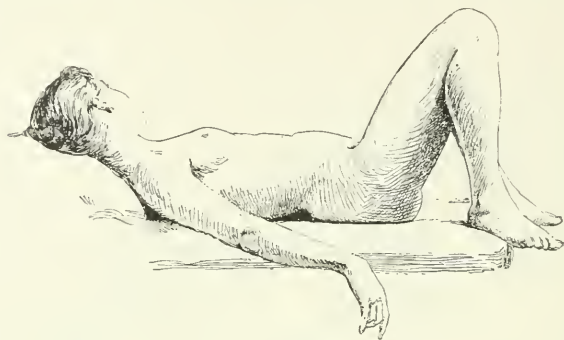


FIG. 7.—Half-flexed dorsal posture—feet on table.

and the upper part of the birth canal of about 120° . The abdominal walls will be relaxed.

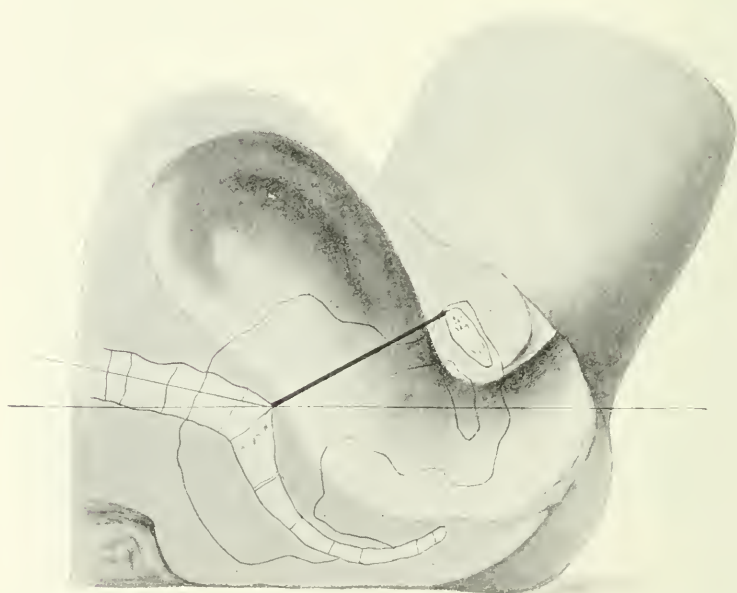


FIG. 8.—Dorsal posture—feet on table. The angle between plane of inlet and horizon is enlarging, and uterine cavity is more accessible.

Dorsal Posture with Thighs Strongly Flexed against the Abdomen.—The knees are carried as near to the shoulders as

possible. The angle between the conjugate and the horizon beneath will be about 60° with the knees wide apart. The symphysis is driven nearer to the promontory, the iliac bones swinging on their rear joints, reversing the conditions shown

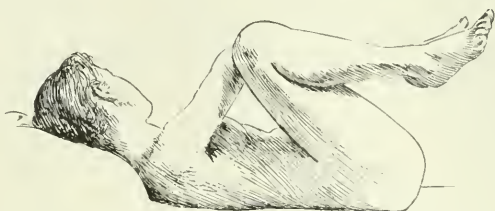


FIG. 9.—Full-flexed dorsal posture—knees toward shoulders.

in Fig. 13. The depressed posterior vaginal wall will fall more nearly into line with the posterior wall of the upper part of the birth canal, the angle being wider than a right angle. There

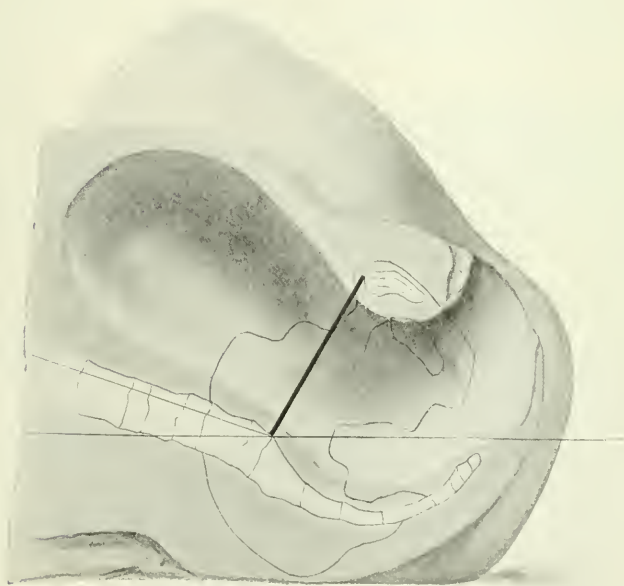


FIG. 10.—Dorsal posture with thighs strongly flexed. Increased angle between inlet and horizon. Accessible birth canal, but conjugate of brim shortened 1 centimetre.

will be some lateral pressure on the uterus, but in front the abdominal walls will be fairly relaxed. For ordinary delivery under anesthesia, after the head has passed the brim, this is the most available position and measurably straightens the

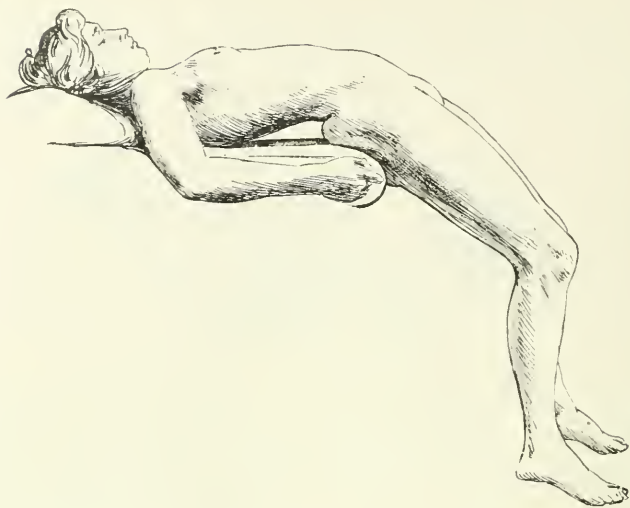


FIG. 11.—Hanging dorsal or Walcher posture. The exaggerated lumbar curve is worthy of note, and the tendency to slide off the table even before any downward traction is exerted within the birth canal. Walcher places a pillow under the sacrum.

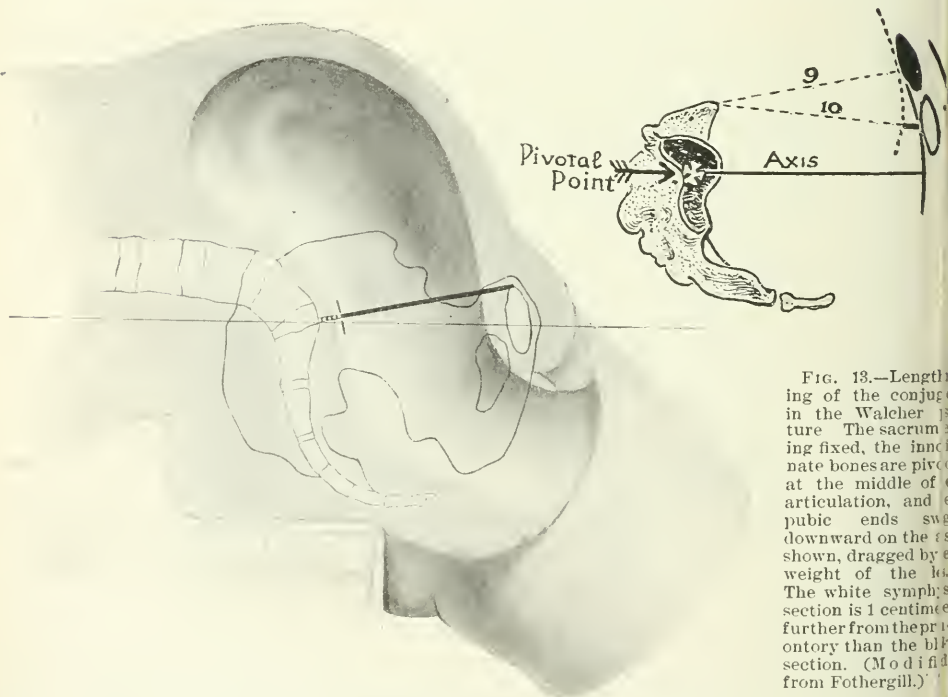


FIG. 13.—Lengthening of the conjugate in the Walcher posture. The sacrum being fixed, the innominate bones are pivoted at the middle of the articulation, and the pubic ends swing downward on the axis shown, dragged by the weight of the legs. The white symphysis section is 1 centimetre further from the promontory than the black section. (Modified from Fothergill.)

FIG. 12.—Lengthening of the conjugate of the brim by the Walcher posture. The axis of the brim points toward the floor.

birth canal. In operations on the perineum and cervix nothing better has been devised.

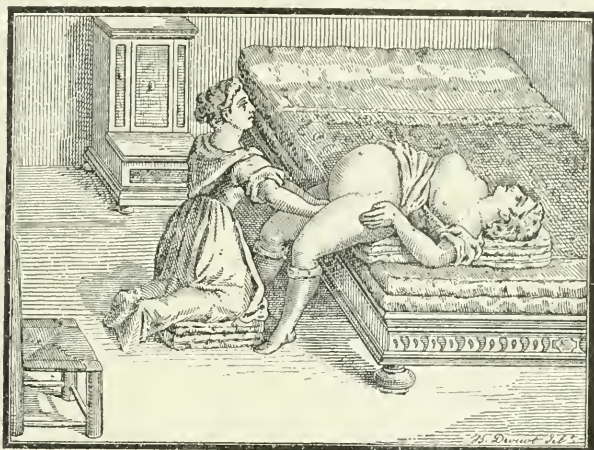


FIG. 14.—Old print from Scipio Mercurio, 1601. Showing that Walcher was reviving an old method.

Walcher Position.—The buttocks are brought to the edge

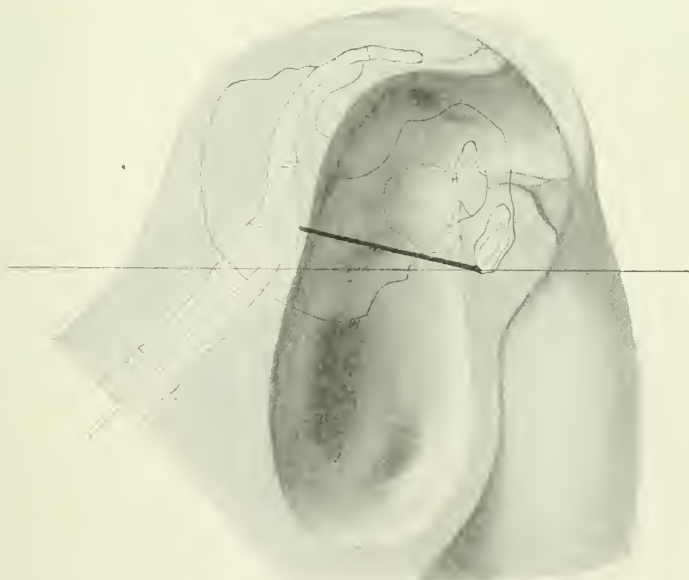


FIG. 15 — Knee-chest posture.

of the table or bed, the legs allowed to hang over, bending backward at the hip joint as far as possible. The lower end of

the sacrum must be at the table's edge. In this position the plane of the pelvic inlet comes quite close to the horizon, with an average angle of 10° to 15° . The depressed posterior vaginal wall comes nearly in line with the posterior uterine wall, and we have a birth canal which is as straight a cylinder as it ever can be, while at the same time the conjugate of the brim is lengthened on an average 0.9 centimetre (three-eighths of an inch), as shown by Walcher,¹ Klein,² Jewett,³ and Fothergill.⁴ There will be some tension on the abdominal walls, so that manipulation through them is not as easy as in other positions.

The objection to this posture is that the direction of traction is straight toward the floor in pulling a head through the inlet in the axis of the latter. This embarrasses any manœuvre greatly, and calls for muscle on the part of the assistant who holds back the patient on the precarious edge over which the operator's traction is pulling her. I have therefore proposed to put the patient, in difficult labors, into the same posture, but to level the birth canal and do away with the necessity of the operator sitting on the floor or working from beneath in a most uncomfortable predicament.

Trendelenburg-Walcher Posture.—The details of this posture have been given in the early part of the paper, and the diagram, if compared with the other diagrams, will sufficiently explain the advantage of a straight birth canal, an enlarged brim, and an easily accessible field of operation.

Knee-Chest Posture.—To complete the series, and for contrast with the Italian posture, I have added the diagram of a patient in this posture, merely noting that the commonest fault in placing the patient is to omit the direction that the thighs should be perpendicular. If they are not perpendicular the position is much less endurable. Moreover, I would say that I devised a harness by which a simple sheet could sling a patient between two chairs so that she could be anesthetized in the knee-chest position, but that the device is much more complicated than the arched dorsal posture.

Clinic on Postures for Examination and Operation.

In the clinical course on obstetrics in the wards of the Long Island College Hospital I have been in the habit of teaching these postures. I submit the following schedule. For effective demonstration there is required a paid model or a willing, con-

¹ Centralblatt für Gynäkologie, 1889, p. 892.

² Zeitschrift für Geburtshülfe und Gynäkologie, xxi., p. 74.

³ Brooklyn Medical Journal, November, 1894, p. 652.

⁴ Edinburgh Medical Journal, July, 1895.

valescent ward patient who may be glad of a fee. She is dressed in a union suit; the gap between the legs is sewed up; she wears stockings and a veil.

DORSAL, for bimanual examination.

Preliminaries.—Patient to loosen all waistbands, buttons of bodice, and corset. Patient empties her bladder. Table or couch with three pillows or inclined plane. Lubricant, towels, sheet, basin with warm water and soap.

Steps.—1. Hold sheet up between yourself and patient as a screen; ask her to step up on a stool; ask her to go through the form of partly raising the back part of the skirts as she sits down; as she sits down throw sheet over her; head on pillow, feet on table.

2. Step to foot of table, seize lower edge of sheet and lower

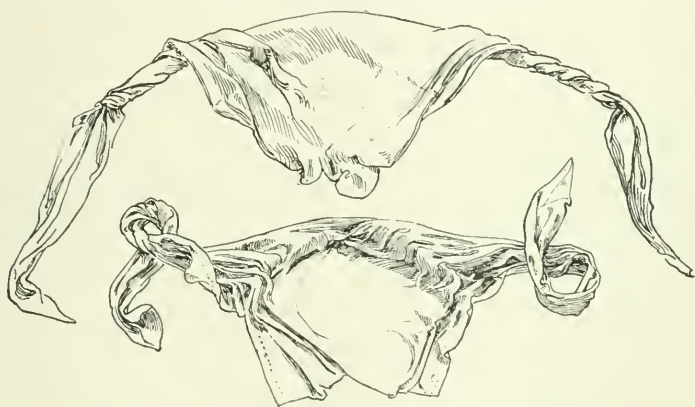


FIG. 16.—Sheet sling, its shawl shape, its bearing on shoulders rather than on neck. Before and after using. See Fig. 20.

edge of skirts in same hold, and push both upward toward symphysis, keeping lower legs covered (or reach under sheet to slip up skirts, then press back sheet between knees, keeping patient well covered and being careful to give that impression).

3. Place feet near together, push knees wide apart, thus relaxing and putting at a disadvantage the abdominal muscles, thigh adductors, and levator ani. Some gynecologists prefer shoulders and head somewhat raised on inclined plane, others low with single pillow.

DORSAL, for operation.

A. (In the absence of table with leg supports.)

Preliminaries.—Underclothes, with stockings or operating drawers, only. The rest as before.

Steps.—1. On back as before, head low, knee joints and hip joints as sharply bent as possible.

2. Place sheet sling. Sheet is seized by diagonally opposite corners and ends loosely rolled, like a shawl. The shawl-shaped triangle caps the shoulders, the straight upper edge against neck. Each end ties below a knee.

3. To cover patient, take a second sheet by diagonal corners, corners hanging over patient's feet; tie corners about feet.

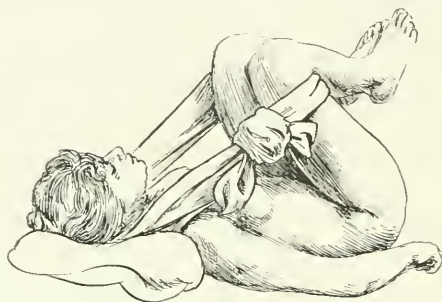


FIG. 17.—Sheet sling wrongly applied. It strains on the neck, and the knees are together. See Fig. 20.

Separate knees widely, wring towel out of solution (or take sterile towel), lay over each buttock up on to thigh, drawing it back until scrubbing has been done. The upper end of one towel lies across the lower abdomen, that operator may seize fundus if desired.

B. Demonstrate method with ¹/₂ leg-rods on table.

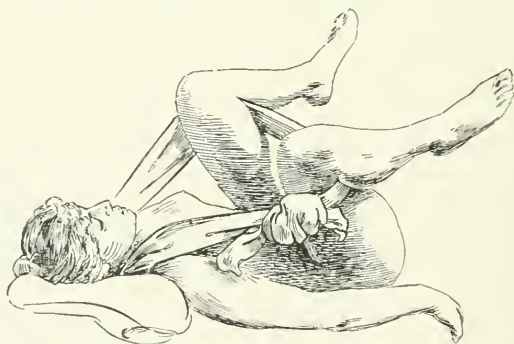


FIG. 18.—Defective method of applying sheet sling, as patient can slip knees together by extending the legs.

SIMS' POSTURE, for operation.

Preliminaries, as before.

Steps.—1. Patient sits on side of table, then lies down on left side, the left arm beneath her; she either lies across her forearm or it is placed against her back or hanging over table edge.

2. To adjust patient, stand at foot of table, place left hand under the hip, pushing it up until it comfortably seizes the iliac crest; the right hand seizes the upper right knee; pull toward you with your left hand; with your right push the knee

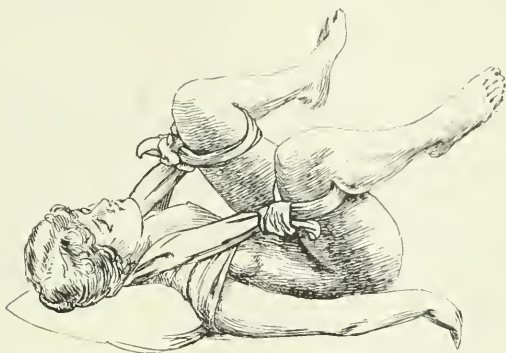


FIG. 19.—Defective method of applying the sheet sling.

away and place it on the table. This will bring the buttocks in good position. Keeping hold, swing the body of the patient so that the lower part of the back just overhangs the edge where the nurse stands. Lastly, bring the shoulders and head



FIG. 20.—Sheet sling applied broadly and properly to shoulders and tied below the knees; thus the knees are held apart and the patient can elevate the feet very little.

to the other edge of the table, if it is narrow. Buttocks are a foot from lower end of table when there is no footpiece on it.

Place sling to hold patient from becoming displaced under ether. It passes beneath the two knees, under and about neck of patient and behind the upper shoulders. Cover her.

KNEE-CHEST POSTURE. (Reposition of prolapsus funis, retroversion, version, tamponing.)

Let patient turn on knees and elbows; make her spread elbows out until chest touches bed, the face turned sidewise; now see that thighs are perpendicular, knees somewhat apart.

WALCHER POSTURE. (Passage of large head through brim.)

Patient, on back, is drawn down and over foot of table until lower end of sacrum rests at edge; thighs are then gently dropped back as far as they will go.

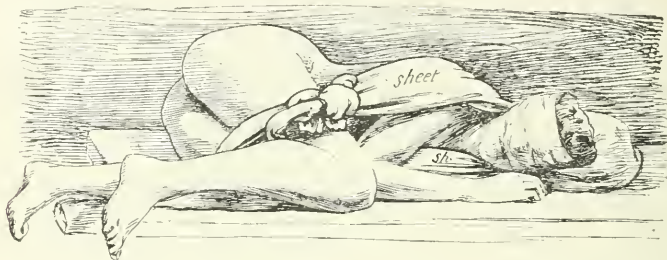


FIG. 21.—The sheet sling applied to latero-prone or Sims' posture.

TRENDELENBURG POSTURE. (Laparotomy for rupture of uterus, tubal pregnancy, etc.)

Preliminaries.—Get ready wooden chair, quilt, sheet sling, pillow. Place chair upside down near edge of bed, quilt folded

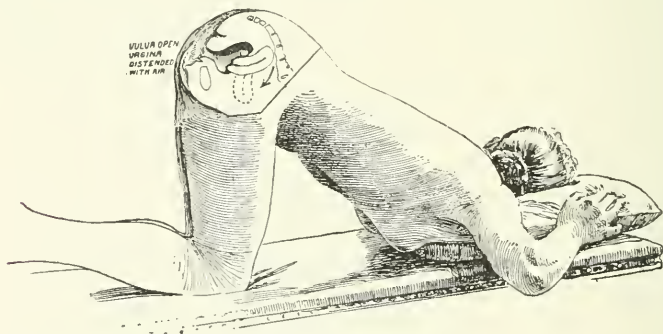


FIG. 22.¹—Knee-chest posture.

over it, sheet tied to one leg of chair at its junction with the seat. Place patient on inclined plane, slip sheet under head and like a shawl over the shoulders. Draw out the slack and tie the loose end to the other hind leg of chair, feet to rest on front rung.

TRENDELENBURG-WALCHER. (High forceps, version, high manual internal rotation for occipito-posterior position, reposition of cord.)

¹From Skene's "Diseases of Women," by permission of Messrs. D. Appleton & Co.

Patient as just described. See that buttocks project clear of upturned rear edge of seat of chair and that there is no rung between the back legs of chair. Lift knees from between the rear legs of chair and drop them outside of those legs, their weight unsupported. Standing between patient's feet, explain ready access to birth canal, line of traction, etc., etc.

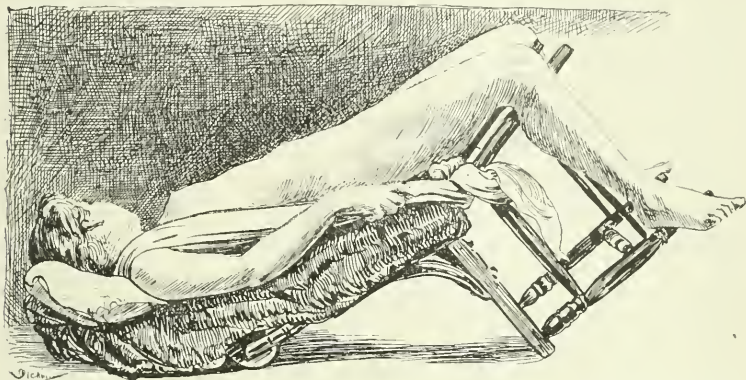


FIG. 23.—The inclined dorsal or Trendelenburg posture with the sheet sling applied. Improved on a chair turned upside-down.

SEMI-RECUMBENT POSITION. (Vaginal ballottement.)

Seat patient on edge of table, chair, or bed, leaning backward.

SQUATTING POSTURE. (Transverse and oblique presentations during dilatation stage.)

Attitude in which the thighs press strongly against the sides of the abdomen.

168 CLINTON STREET, BROOKLYN, NEW YORK.

THE CAUSE OF THE CONFLICTING STATEMENTS CONCERNING THE BACTERIAL CONTENTS OF THE VAGINAL SECRETION OF THE PREGNANT WOMAN.¹

BY

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EVERY one who has attempted to follow the literature upon the bacteriology of the vaginal secretion in pregnant women

¹ Read before the Medical Journal Club of Baltimore, October 22, 1898.

must be impressed with the large amount of work which has been done upon the subject, and must regret that it has not as yet led to a general consensus of opinion.

The first work upon the subject, in which modern bacteriological methods were employed, was published in 1887 by Gönner, who stated that the vaginal secretion of pregnant women did not contain the several varieties of bacteria which are usually found in puerperal infection, although it did contain large numbers of bacteria, which could be seen in cover-slip preparations, but which would not grow upon the usual culture media. He therefore concluded that autoinfection could not occur and that prophylactic vaginal disinfection was not necessary.

The same year, Döderlein stated that the lochia taken from the vagina, in at least 75 per cent of the cases, contained species of micro-organisms which grow upon the usual culture media, among which streptococci and staphylococci were not infrequently noted. He was accordingly forced to admit that autoinfection might occur in a certain proportion of cases, and accordingly advocated the use of prophylactic vaginal douches.

Hardly a year has elapsed since 1887 in which one or more articles have not appeared on this subject, and, unfortunately, the conclusions of almost every author have been more or less directly contradictory of those of his immediate predecessors.

I shall not attempt to go into the history of the subject at this time, for the reason that I have recently done so in the article which I read before the American Gynecological Society last May, and which appeared in *THE AMERICAN JOURNAL OF OBSTETRICS* for October, 1898, but shall content myself with saying that the various observers may still be grouped in the same two classes as were Gönner and Döderlein. The one class of observers, believing that the vaginal secretion of pregnant women is absolutely free from the various pathogenic micro-organisms which give rise to puerperal infection, discard the doctrine of autoinfection, and therefore consider preliminary vaginal disinfection as useless, if not absolutely harmful; while their opponents believe that the vagina is swarming with various varieties of pathogenic micro organisms, and are accordingly forced to believe in the possibility of autoinfection in a certain number of cases, and to recommend the employment of prophylactic vaginal douches if they follow their belief to its legitimate conclusion.

To put the matter briefly, we may say that Gönner, Thomen,

Samschin, Krönig, Menge, and myself (in 1898) take the negative side; while the majority of observers believe that pyogenic bacteria may be found in a certain proportion of cases; streptococci, not to mention the several varieties of staphylococci and the colon bacillus, having been found by the various observers in a varying percentage of these cases, as is shown by the following list: Burckhardt 4 per cent, Steffeck 4 per cent, Döderlein $4\frac{1}{2}$ per cent, Burguburu $8\frac{1}{2}$ per cent, Vahle 10 per cent, Witte $12\frac{1}{2}$ per cent, Kottmann 13 per cent, Winter 15 per cent, myself (1893) 20 per cent, and Walthard 27 per cent.

In view of the marked discrepancy in the results of the various investigators, and the statement of Krönig that the positive results of most observers were due to the faulty method by which they obtained the secretion for examination, by which they themselves introduced into the vagina the bacteria which they later found in their cultures, I determined to repeat my work of 1893 upon a larger number of cases, following as closely as possible the technique employed by Krönig.

I did so, and reported the results of the examination of 92 cases to the American Gynecological Society last May, when I stated that I had been unable to cultivate streptococci from a single case, and had found the staphylococcus albus in only two cases, and therefore found nothing which could lend the slightest support to the doctrine of autoinfection.

These results fully substantiated Krönig's statements concerning the absence of pyogenic bacteria from the vaginal secretion, and were directly contradictory of my work in 1893, when I examined the vaginal secretion from 15 pregnant women who were kindly placed at my disposal by the late Prof. Michael at the Lying-in Hospital of the University of Maryland. At that time, I demonstrated the presence of streptococci in 20 per cent and staphylococci in 53 per cent of my cases.

The explanation which I offered in my recent paper for this marked difference in results was that in my early work I unintentionally introduced into the vagina a large part of the organisms which I later found in the cultures, while I avoided so doing in my later work.

In 1893 I obtained the secretion for examination by introducing a sterilized cylindrical glass speculum into the vagina, and taking the secretion from portions of the vaginal wall which apparently had not come in contact with the end of the speculum; whereas, in the later series of cases, I employed an

apparatus which was invented by Menge for obtaining the secretion from non-pregnant women. This consists of a nickel-plated tube about 25 centimetres in length and 4 or 5 millimetres in diameter, which is closed at one end. Just above the closed end is a fenestrum 2 centimetres long, which takes in about one-half the periphery of the tube. Within this tube fits a second tube, whose upper end is provided with a handle, and whose lower end is so arranged as to close the fenestrum, when it is pushed down within the outer tube, and to open it when it is drawn up. After sterilization, the instrument is ready for use and is introduced into the vagina, after spreading the margins of the hymen widely apart, taking care that the instrument does not come in contact with its margins. After its introduction, the fenestrum is opened and the secretion scooped up by giving the instrument a rotary motion, after which the fenestrum is closed and the tube removed from the vagina, and taken to the laboratory, where its contents are examined.

By this means one is able to obtain a secretion which has not been contaminated by bacteria from the entrance to the vagina; whereas, it is more than probable, when a speculum is used for obtaining the secretion, that a certain number of organisms, which are present about the hymen, are carried up into the vagina and become mixed with its secretion.

When I reviewed the literature from this point of view, I found that the observers who had obtained positive results (with the exception of Kottmann) had obtained the secretion for examination by means of a speculum; while Krönig, Menge, and myself employed a small tube, which could be introduced into the vagina without coming in contact with the margins of the hymen, and thereby practically eliminated the danger of contamination by bacteria from the vulva. At first glance, the work of Kottmann appears to contradict this statement, as he did not employ a speculum, but made use of an ingenious apparatus, with which he believed he could obtain the vaginal secretion without danger of contamination. His apparatus in this respect, however, is quite as faulty as the speculum, as I indicated in my paper, and its imperfections are clearly shown by the results obtained with it, as he demonstrated staphylococci in 70 per cent, streptococci in 13 per cent, and colon bacilli in 11 per cent of his cases.

While the explanation which I have offered explains the difference in results in an apparently satisfactory manner, it is not absolutely conclusive; and, on my return from the meet-

ing of the American Gynecological Society last spring, I determined to attempt to settle the question definitely by the series of experiments to which I now wish to invite your attention.

From each of 25 pregnant women, who had not been examined previously, I removed with a platinum needle some of the secretion from the margins of the hymen and the inner surface of the labia minora, and then obtained a certain amount of vaginal secretion by means of Menge's tube, and immediately afterward introduced a sterilized glass speculum into the vagina and obtained the secretion from portions of the vaginal wall which apparently had not come in contact with the tip of the speculum. From each of the three secretions thus obtained, cover-slip preparations were made and three agar plates inoculated; agar alone being used as a culture medium, instead of the various media which I had employed in my previous work, as I desired to isolate and study only the pyogenic bacteria, instead of the entire bacterial flora of the vagina.

The results are shown in the table on pages 814 to 816 of this article, in which I give the bacteria which I cultivated from the three varieties of secretion from each case, and also the description of the cover-slip preparations which were made from the secretion obtained by means of Menge's tube. To avoid unnecessary repetition, I shall designate the secretion obtained from the vulva, and that obtained from the vagina by means of Menge's tube and the speculum, as vulval, tubal, and specular secretion, respectively.

In 4 of 25 cases, I found the same organisms growing upon the plates from each of the three varieties of secretion, and, as they were identical with those which I found in cover slips made from the tubal secretion, I feel justified in concluding that I had to deal with the original vaginal secretion in each case, and that the tubal and specular secretions had not been contaminated from the vulva.

When we analyze the results which I obtained in the remaining 21 cases, we find that staphylococci (either albus or epidermidis albus) were observed in the vulval secretion in 15 cases (60 per cent), in the specular secretion in 10 cases (40 per cent), and that they were uniformly absent from the tubal secretion. I also found that colon bacilli were present in the vulval secretion in 4 cases, in the specular secretion in 2 cases, and that they were absent from the tubal secretion. Adding together the cases in which staphylococci or colon bacilli were

observed, we find that pyogenic bacteria were found in the vulval secretion of 19 cases (76 per cent), in the specular secretion of 12 cases (48 per cent), and were entirely absent when secretion was obtained by means of the tube.

Looking at the matter from another point of view, we find that plates made from the vulval secretion were never sterile; while they were sterile in 5 cases (20 per cent) when the secretion was obtained by means of a speculum, and in 15 cases (60 per cent) when obtained by means of Menge's tube.

Upon a certain number of plates we found nothing but a few yeast colonies, which not infrequently occur in the normal vaginal secretion, so that we may also regard the cases in which they were observed as practically sterile. Yeast colonies were found twice in the vulval secretion and three times in both the tubal and specular secretions. Adding these results together, we find that the vulval and specular secretion was either sterile or contained nothing but yeast in 2 cases (8 per cent) and in 8 cases (32 per cent), respectively, while the tubal secretion was sterile or contained nothing but yeast in 18 cases (72 per cent).

It is accordingly evident that pyogenic bacteria occurred very frequently in the vulval secretion, less frequently in specular secretion, and were entirely absent from the tubal secretion, being present in 60, 40, and no per cent of the cases, respectively; whereas the converse is the case when we consider the cases in which the cultures were sterile, as is shown by a percentage of 8, 32, and 72, respectively.

When we analyze the table from another point of view, we note that staphylococci were observed in the specular secretion in 10 cases, in 8 of which staphylococci were likewise present in the vulval secretion, but absent from it in the 2 remaining cases. As the tubal secretion was sterile in all of these cases, I feel that we shall not go far wrong in concluding that the staphylococci, which were found in the specular secretion in the 8 cases in which staphylococci also were found in the vulval secretion, had been carried up into the vagina from the vulva by means of the speculum; for had they been originally present in the vagina, they would likewise have been found in the tubal secretion. It would therefore appear that staphylococci were noted in the vulval secretion in 15 cases, and in 8 of them (53 per cent) were carried up into the vagina by introduction of the speculum.

Exactly the same may be said concerning the colon bacilli,

which were observed in the vulval secretion in 4 and the specular secretion in 2 cases. In other words, colon bacilli, which were present at the vulva, were carried up into the vagina in 50 per cent of the cases by introduction of a sterile speculum.

My work shows conclusively, whenever pathogenic bacteria are present about the vaginal orifice, that they are carried into the vagina in about 50 per cent of the cases, when an object the size of a small cylindrical speculum is introduced into the vagina and comes in contact with the margins of the hymen.

And I believe that I shall not go far wrong if I state that the positive results of the observers who employed specula for obtaining the vaginal secretion for examination are to be explained in the same way; and it would appear that Krönig was perfectly justified in stating that the positive results of most investigators were due to bacteria which they had introduced into the vagina themselves.

This series of cases also serves to confirm my work of last spring and enables me to add 25 cases to the 92 which were then reported, making a total of 117 cases in which the vaginal secretion was obtained by means of Menge's tube, and in which streptococci were not found at all and staphylococci only in 2 cases.

The practical results obtained from the 25 cases under consideration may be summarized in the following conclusions:

1. This work tends to reconcile the conflicting results of the various observers by showing that they are due to the difference in the technique by which the secretion was obtained for examination, and not to gross errors in bacteriological work.

Those who obtained the secretion by means of a speculum carried bacteria from the vulva up with it and necessarily got positive results; while those who obtained their secretion by means of a small tube avoided so doing and obtained negative results.

2. This series of cases serves to confirm the previous work of Krönig and myself, which conclusively shows that the various pyogenic bacteria which give rise to puerperal infection are not found in the vaginal secretion of pregnant women.

3. This being the case, autoinfection with these organisms cannot occur, and when they are found in the puerperal uterus they have been introduced from without. Accordingly, prophylactic vaginal douches are not necessary and are probably

No.	Name.	Appearance in tube.	Cover slip from secretion obtained by Menge's tube.	Agar plates.		
				From vulva.	Tube.	Speculum
1	.....	Thick, white.	Epithelium, no leucocytes. Vaginal bacilli, possibly a few cocci.	1. Staphylococcus albus. 2. Unidentified thick bacillus.	Sterile.	Short, thick, non-motile, unidentified bacillus.
2	Hagan.	Thick, white, starch-like.	Epithelium, leucocytes. Fairly thick bacilli, 1-2-4, alone. in pairs or short chains. Yeast (?).	Pink cocci....	Sterile..	Staphylococcus albus.
3	Cole ...	Thick, creamy, some gas bubbles	.....	Staphylococcus albus.	Sterile..	Sterile.
4	Hanks.	Yellowish fluid.	Epithelium. leucocytes. Short, thick bacilli, rounded ends. Yeast (?).	1. Short, tolerably thick bacilli, 1-2-3, rounded ends; non-motile; stain with Gram: grow anaerobically in agar, not in potato and milk. Yeast (?).	Like vulva.	Like vulva.
5	Galliger	Thick, white fluid.	Epithelium, many leucocytes. 1. Short, thick bacilli, rounded ends, from almost coccus forms to 1-3. 2. Thinner bacilli, 1-3-4. 3. Yeast.	Staphylococcus albus.	Sterile..	Staphylococcus albus.
6	Hen-derson.	Thick, white fluid.	Epithelium, no leucocytes. 1. Fairly thick bacilli, rounded ends. 1-2-3. 2. Thicker bacilli, square ends, 1-3-4. 3. Yeast (?).	Short, thick bacilli, 1-2-3, rounded ends; non-motile; stain with Gram; grow on agar, not on other media.	Like vulva.	Like vulva
7	Red-ding.	Thick, white, starch-like.	Epithelium, no leucocytes. Typical vaginal bacilli, possibly a few diplococci.	Staphylococcus epidermidis albus. Bacillus like vaginalis, growing up on agar, but not on other media.	Bacillus as in vulva.	Bacillus as in vulva.

No.	Name.	Appearance in tube.	Cover slip from secretion obtained by Menge's tube.	Agar plates.		
				From vulva.	Tube.	Speculum
8	Neubauer.	Thick, white, starch-like.	Epithelium, few leucocytes. 1. Fairly thick bacilli of varying length. 2. Yeast (?).	Staphylococcus albus.	Sterile..	Staphylococcus albus.
9	Maslin.	Thick, white, starch-like.	Epithelium, few leucocytes. 1. Fairly thick bacilli of varying length, 1-2-4, often in chains. 2. Thick bacilli, square ends, 1-3-4. 3. Diplococci. 4. Possibly few yeast.	Staphylococcus albus.	Sterile..	Sterile.
10	Olsen...	Thick, white, starch-like.	Epithelium, no leucocytes. 1. Fairly thick bacilli, 1-3-4, often in chains. 2. Yeast.	Staphylococcus albus.	Yeast..	Staphylococcus albus. Yeast.
11	Wil-mott.	Thick, white, starch-like.	Epithelium, no leucocytes. 1. Vaginal bacilli. 2. Much thicker bacilli, rounded ends, 1-3-4.	Staphylococcus albus.	Sterile..	Staphylococcus albus.
12	Togood.	Thick, yellow fluid.	Epithelium, few leucocytes. 1. Short, thick bacilli, rounded ends. 2. Fairly thick, long bacilli, 1-4. 3. Large diplococci.	Colon bacillus.	Bacillus like vaginalis growing upon agar.	Colon bacillus.
13	.....	Thick, white, starch-like.	Epithelium, very few leucocytes. Fairly thick bacilli, 1-3-4, often in chains.	Very thick bacilli, 1-3-5; decolorizes with Gram; non-motile; do not grow on milk or potato.	Sterile..	Like vulva.
14	Kingston.	Thick, white, starch-like.	Epithelium, no leucocytes. Vaginal bacilli. Yeast.	Yeast.....	Fairly thick bacilli, 1-3-4.	Yeast.
15	Pleasants.	Thick, white, mucous	Epithelium, leucocytes. 1. Fairly thick, long bacilli, 1-4-5. 2. Fairly thick bacilli, 1-2.	Staphylococcus albus.	Sterile..	Staphylococcus albus.
16	Koslowsky.	Thick, yellowish white, gas bubbles	.....	Staphylococcus albus.	Sterile..	Staphylococcus albus.

No.	Name.	Appearance in tube.	Cover slip from secretion obtained by Menge's tube.	Agar plates.		
				From vulva.	Tube.	Speculum
17	Steed...	Thick, white, starch-like.	Epithelium, no leucocytes. 1. Fairly slender bacilli, from almost coccus forms to 1-3. 2. Possibly few diplococci.	Staphylococcus albus.	Sterile..	Sterile.
18	Lewis..	Thick, milky white fluid.	Epithelium, no leucocytes. 1. Tolerably thick bacilli of varying length, 1-2-5. 2. Possibly few diplococci.	Colon (at least 50 colonies).	3 colonies of colon.	Colon (12 colonies.)
19	Johnston.	Thick, white fluid.	Epithelium, leucocytes. Fairly thick bacilli of varying length, from almost coccus forms to 1-4.	Colon	Sterile..	Unidentified bacillus. Staphylococcus albus.
20	Williams.	Milky white.	Epithelium, leucocytes. 1. Long, fairly thick bacilli, 1-4-5, often in short chains. 2. Short, fairly thick bacilli, 1-2-3. 3. Few cocci.	Colon. Staphylococcus albus.	Sterile..	Staphylococcus albus.
21	Morris..	Thick, white, starch-like.	Epithelium, no leucocytes. 1. Tolerably thick bacilli, 1-2-4, often in short chains. 2. Possibly a few cocci.	Staphylococcus albus. Moderately thick bacilli, which will not grow beyond original plates.	Sterile..	Sterile.
22	Jones..	Thick, white, mucous.	Epithelium, no leucocytes. Fairly thick bacilli, 1-2-4. Possibly a few yeast.	Staphylococcus albus. Colon.	Yeast..	Yeast.
23	Hennings.	Thick, yellowish-green fluid.	Epithelium, leucocytes. 1. Short, thick bacilli, 1-1½-3, often in pairs and short chains. 2. Cocci and diplococci.	Staphylococcus albus.	Sterile..	Staphylococcus albus.
24	Jackson.	Thick, white fluid.	Epithelium, no leucocytes. 1. Large, thick bacilli, 1-4-6, square ends, often in long chains. 2. Cocci. 3. Short, thick bacilli, 1-2-3, rounded ends.	Cocci which grow slightly on potato; no growth in milk.	Like vulva.	Like vulva.
25	Clark...	Thick, white.	Epithelium, few leucocytes. 1. Tolerably thick bacilli, 1-2-5. 2. Yeast.	Yeast	Yeast..	Yeast.

harmful, laboratory work thus standing in direct accord with the practical experience of most clinicians.

4. The work clearly demonstrates the danger of vaginal examinations, as I have shown that the introduction of a small cylindrical speculum, which is certainly no larger than two fingers, carries up into the vagina, in 50 per cent of the cases, whatever pathogenic organisms may be present at the vaginal entrance.

In view of the extreme sensibility of the vulva and the manifest impossibility of disinfecting it with anything like the certainty with which we can disinfect our hands, it becomes apparent that the introduction of a perfectly sterile finger into the vagina is not always a harmless procedure.

5. The danger of the vaginal examination being thus demonstrated, it is apparent that it must give place more and more to the external examination of the pregnant and parturient woman.

WHY I PERFORM VAGINAL ABLATION IN PELVIC INFLAMMATORY CASES.¹

BY

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I BEG that you will pardon the personal in the title to my paper, but I write from personal experience and that is the basis of my arguments. I have no right to speak for others.

Certain questions are not relevant, namely, the propriety of hysterectomy in pus cases, the advisability of using ligatures or forceps, etc. I shall concern myself merely with stating why, when I perform hysterectomy in pus cases, I prefer the vaginal route.

The Incision.—It is not necessary to cut the perineum. I sever two anatomical layers only, the vaginal mucosa and the peritoneum. In laparotomy the skin, fat, fascia, muscle, and peritoneum are cut. The vaginal incisions sever no spouting vessels which require ligation, while in laparotomy ligation of

¹ Read before the Mississippi Valley Medical Association, Nashville, Tenn., October 12, 1898.

many small arterial trunks is often necessary. Both abdominal and vaginal ablations necessitate dissecting the uterus from the bladder, but in doing this the advantage is with the vaginal route, inasmuch as the cervix is there found as a guide, and that portion of the uterus to which the bladder is attached is under perfect control. In the vaginal operation it is not masked by the viscera, which lie in the way in laparatomy.

Separation of Adhesions.—In laparatomy it is often necessary to work through a mass of adherent intestines before the organs to be removed are seen, while in vaginal section all the work proceeds below the matted guts which lie above the uterus. This is a most important feature of the vaginal operation and worthy of amplification. There are two kinds of adhesions: those between the abdominal viscera and those between the pus foci and the abdominal viscera. In vaginal section we do not disturb the interintestinal adhesions nor the adhesions between the omentum and intestines. You may think that it is necessary to sever these, but even though the adherent intestines are freed they form attachments more firm and general than first existed. Besides, in some cases the union is so firm and intimate that great breaches are made in the intestinal walls, often requiring suture. The manipulations necessary to free adherent guts rub off the endothelium, and in these pus cases such raw surfaces become infected.

Regarding the adhesions to the organs to be removed, I may say that in the vaginal operation the raw surfaces remain turned downward where provision is made for drainage, and are not dragged up above the pelvic brim to carry the pelvic infection to tissues not previously infected.

In the vaginal operation only those false unions are severed which bind the diseased organs, and these are by far less important than the matted mask of viscera which lies above them.

In laparatomy very often a tedious, grave surgical operation is done before the organs to be removed are seen.

In vaginal section the diseased organs are usually removed without the operator seeing a movable knuckle of gut.

Direction of Effort in the Enucleation.—In laparatomy the operation proceeds through an incision which it is expected shall heal by first intention, and through a mass of adherent intestines. The infected organs are dragged up between the raw surfaces left after separating the adherent intestines, and

between the margins of the abdominal incision. The fingers, whether naked or gloved, repeatedly take the same path, and no hand which has been engaged in liberating and removing pus foci can be insured as clean. In laparotomy the organs removed are dragged from their pelvic attachments through the lower part of the abdomen. In vaginal ablation the direction of the effort is in the direction of drainage at the lowest part of the peritoneal pouch. The pelvic filth remains pelvic and is never led into the abdomen. It does not pass by tissues which are to be sutured, and does not infect areas of intestine from which the endothelium has been removed by manipulation.

Hemostasis.—In laparotomy this is by means of ligatures which must be absorbed; certainly those upon the ovarian vessels are cut short and left in. These ligatures are so frequently infected, being placed in an infected field, that they are often sources of trouble although isolated in a mass of lymph. All the problems embraced in a consideration of the choice of ligature material, its preparation and its fate, are factors when the operation is done through the abdomen. They are not considered in the vaginal operation.

Drainage.—In laparotomy this must sometimes be employed, particularly in cases of streptococcus infection, diffuse suppuration, and where tubo-rectal fistulæ exist. As a result the isolation of the area drained is effected by a matted mass of lymph thrown out by the intestines, and a breach is left in the abdominal scar. Besides, the pelvic filth is drained through the *normal* abdominal cavity and is up-hill. In vaginal ablation the drainage is always used; it is at the lowest part of the pelvic cavity; the intestines do not become adherent to the drain or area drained; the pelvic filth remains pelvic, and drainage is down-hill.

Drainage after laparotomy, though not often used nowadays, infects the entire area adjacent to the drain from the pelvic floor to the abdominal skin. Drainage after vaginal ablation passes for not over an inch through the lowest part of the pelvic peritoneum, and most of it is through the vaginal tube, which is particularly adapted to carry off the material drained away without absorbing any. The infected drainage space after laparotomy remains for a large part an abdominal complication, and for weeks.

After vaginal ablation the drainage track is in a few hours made extraperitoneal by the union of bladder to rectum.

Sutures.—These are not used in vaginal ablation. So important a matter is the method by which the abdominal wound should be closed that there are about as many varieties as there are operators. Shall the wound be closed by buried catgut, buried kangaroo tendon, or buried silver wire? Shall the wound be united by suturing in tiers or through-and-through suturing, or shall the fat be left open? Shall the suture be applied as interrupted or mattress or continuous sutures?

Hernia.—The percentage of hernias after laparotomy is not known, but there are many of them. They are not known to follow the vaginal ablation by forceps. The intra-abdominal effort is almost wholly borne above the symphysis, while the vaginal vault is protected from this force by the posture of the body and the sacral promontory.

Accidents.—In abdominal hysterectomy the bowel must sometimes be sutured; the ureters have been cut; abdominal fistulæ are known to exist, and ligatures have worked their way into the bladder. After vaginal ablation intestinal suture and resection must be exceedingly rare procedures; in the few cases in which the bladder has been wounded the rents closed without suture; unless made by the veriest tyro, no wounded ureters are heard of and no abdominal fistulæ are found.

Instruments.—In laparotomy, knives, scissors, needles, sutures, ligatures, needle-holders, etc. In vaginal ablation, no needles, no sutures, and no ligatures. Much less complicated is the preparation for vaginal section.

Narcosis and Time.—Abdominal hysterectomy necessitates an abdominal section and a hysterectomy. Vaginal ablation is a hysterectomy only, without the abdominal section. Few men can perform a *finished* abdominal hysterectomy in less than three-quarters of an hour in *pus cases*. Twenty minutes only need be consumed in vaginal ablation. In order to secure relaxation of the abdominal muscles, profound narcosis is necessary in laparotomy. With vaginal ablation the narcosis is incomplete and short, and chloroform again becomes the preferable anesthetic.

Convalescence.—No man who has seen a number of similar cases treated by the two methods but will decide that the ability to turn over in two days, the assumption of regular diet in four days, the regularity of the bowels from the first, the absence of nausea and vomiting, the early getting-up, make the convalescence from vaginal ablation much less disagreeable than from laparotomy.

Results.—Up to October 1 I had performed vaginal hysterectomy for pelvic inflammatory lesions, exclusive of fibroids and cancer, eighty times. Since that time I have made the operation a number of times. No case has died either from the operation or from complications. There are no fecal fistulæ to report, no sinuses, no vesico-vaginal fistulæ, and no hernias. There have been no cases of phlebitis and no intestinal obstructions. The vagina has in no case been shortened, and intercourse is painless.

These are the reasons why I perform vaginal ablation in pus cases.

For the technique of the operation as I prefer to do it I must refer you to THE AMERICAN JOURNAL OF OBSTETRICS, vol. xxxviii., No. 6, 1898.

It has been difficult to be fair both to myself and to the statistics in making this report. Whenever I have operated for cancer with tubal inflammation I have classed the case as cancer. Cases of fibroid with adhesions but no pus I have excluded. Merely evacuative operations, as for general suppurative peritonitis due to ruptured appendix, twisted ovarian pedicle, and such, I have excluded. I have inserted all cases arising as pelvic inflammations, no matter what the constitutional symptoms were. Many hysterectomies were abdominal or vagino-abdominal. These are not reported. The cases reported were vaginal extirpations. Case 78 was begun as an abdominal section, but, it becoming too dark to see, the operation was made through the vagina. It is therefore credited to the vaginal route. Operations begun by the vagina to render laparotomy more easy are not included.

EIGHTY-ONE CONSECUTIVE VAGINAL ABLATIONS OF PELVIC INFLAMMATORY LESIONS.

Sclerosis with peritoneal lesions	11 cases.
Pus cases	48
Diffuse suppuration	7 “
Pelvic lesions after laparotomy	6 “
Ectopic gestation with various lesions.	9 “
<hr/>	
Total	81 “

No.	Initials.	Age.	Reasons for operation.	Result.	Time.
1	L. S.	30	Bilateral salpingitis; small fibroids . . .	Cured.	Reported in the <i>Medical Record</i> , July 11, 1894.
2	M. F.	34	Bilateral tuberculous salpingitis.	"	
3	L. N.	24	Abdominal sinus and diffuse pelvic sup- puration about infected ligatures left after celiotomy.	"	
4	M. P.	21	Bilateral pyosalpinx; diffuse pelvic sup- puration; large chancroids on vulva.	"	
5	L. J.	29	General pelvic peritonitis due to in- fected ligatures after celiotomy.	"	
6	M. B.	32	Bilateral salpingitis; suppurative, spe- cific.	"	
7	M. W.	34	Bilateral pyosalpinx	"	
8	M. S.	40	Chronic bilateral salpingitis; repeated attacks.	"	
9	L. Z.	35	Bilateral pyosalpinx	"	
10	A. H.	35	" " " " " " " " " " " " " " " "	"	
11	A. C.	39	Diffuse pelvic suppuration.	"	
12	T. P.	22	Ruptured ectopic gestation; salpingitis on other side	"	
13	H. H.	(?)	Bilateral pyosalpinx	"	
14	M. F.	28	Left pyosalpinx and diffuse pelvic peri- tonitis; laparotomy a year before for right pus tube.	"	
15	O. H.	21	Bilateral pyosalpinx	"	
16	S. H.	28	Unruptured tubal pregnancy of right side, chronic salpingitis of left.	"	
17	S. A.	39	Left pyosalpinx	"	
18	— S.	46	Old ectopic, which had ruptured into right broad ligament; diffuse pelvic suppuration.	"	
19	M. S.	44	Bilateral pyosalpinx.	"	
20	J. K.	23	Bilateral suppurative salpingitis.	"	
21	L. G.	46	Bilateral pyosalpinx and diffuse pelvic suppuration	"	
22	B. W.	28	Bilateral chronic salpingitis; general pelvic adhesions; many previous mi- nor operations, etc.	"	
23	E. B.	47	Multiple adhesions; occluded sclerosed tubes; persistent pelvic pain.	"	Novem- ber, 1896.
24	L. B.	25	Large cystic ovaries; typical hyster- epilepsy; done after careful considera- tion and statement that was purely experimental.	Slight im- prove- ment at end of one year	Novem- ber, 1897.
25	M. B.	26	Large bilateral pyosalpinx; had puerpe- ral fever; curettage; again curettage.	Cured . . .	Decem- ber, 1897.
26	A. B.	26	Bilateral pyosalpinx.	"	January, 1898.
27	F. B.	27	Diffuse pelvic suppuration.	"	January, 1896.
28	E. B.	29	Bilateral purulent salpingitis; acute peritonitis.	"	Decem- ber, 1896.
29	M. B.	30	Chronic pelvic peritonitis; multiple ad- hesions; purulent tubes; puerperal case.	"	April, 1897.
30	L. C.	32	Bilateral pyosalpinx; twice curetted. . .	Cured . . .	January, 1898.

No.	Initials.	Age.	Reasons for operation.	Result.	Time.
31	V. C.	27	Bilateral pyosalpinx.....	Cured.	Feb., 1898.
32	B. C.	29	Bilateral pyosalpinx; acute diffuse peritonitis; several evacuating operations elsewhere.	Cured. Gangrene of appendix on third day; appendectomy; cured.	March, 1898.
33	A. C.	42	Right ovarian cyst; left purulent salpingitis; general pelvic peritonitis.	Cured....	March, 1897.
34	A. C.	27	Bilateral pyosalpinx.....	"	September, 1898.
35	L. C.	24	Left ruptured ectopic; right pyosalpinx.	"	September, 1897.
36	L. D.	25	Bilateral pyosalpinx.....	"	October, 1896.
37	M. D.	28	Bilateral pyosalpinx; three previous operations on uterus.	"	October, 1897.
38	K. D.	24	Bilateral pyosalpinx; diffuse suppuration.	"	July, 1898.
39	M. E.	35	Old chronic tubo-ovarian disease; purulent metritis; multiple adhesions.	"	January, 1895.
40	A. W. F.	24	Diffuse pelvic suppuration.....	"	December, 1897.
41	F. F.	18	Repeated gonorrhea; bilateral pyosalpinx; had several vaginal incisions.	"	"
42	M. F.	38	Right ruptured ectopic; left purulent salpingitis; general pelvic peritonitis.	"	March, 1898.
43	M. F.	27	Bilateral pyosalpinx; left ovarian abscess; two miscarriages; curetted; sepsis; vaginal incision; relapse.	"	November, 1897.
44	E. F.	39	Large cystic ovaries; purulent salpingitis; multiple adhesions; uterus fixed.	"	February, 1898.
45	G. F.	27	Left pyosalpinx; right salpingo-oöphoritis; actively syphilitic.	"	January, 1897.
46	K. G.	25	Bilateral pyosalpinx; left ovarian abscess; repeated gonorrhea.	"	January, 1898.
47	A. G.	42	Chronic pelvic peritonitis; pachysalpingitis; many adhesions.	Cured; bronchopneumonia.	"
48	S. G.	20	Abdominal sinus after laparotomy nine months ago; left pyosalpinx; diffuse pelvic peritonitis.	Cured....	September, 1898.
49	N. H.	30	Bilateral tubercular pyosalpinx; general tuberculosis.	"	November, 1897.
50	A. H.	51	Bilateral chronic salpingo-oöphoritis; many adhesions; uterine prolapse.	"	"
51	C. J.	35	Enormous left ovarian abscess four inches in diameter; left pyosalpinx; right pyosalpinx.	"	December, 1897.
52	F. K.	28	Septic metritis; enlarged uterus retroverted, adherent; peritonitis; after laparotomy, syphilitic roseola.	"	March, 1897.

No.	Initials	Age.	Reasons for operation.	Result.	Time.
53	M. M.	23	Right sacculated pyosalpinx; left pachysalpingitis; three abortions; one clap.	Cured . . .	December, 1897.
54	A. M.	55	Bilateral pyosalpinx; left ovarian abscess; acute gonorrhea; atrophy of vulva general	"	February, 1898.
55	D. M.	44	Bilateral purulent salpingitis; uterine fibroids.	"	"
56	M. M.	26	Bilateral ovarian abscess; right filling pelvis, left above pelvic brim.	"	March, 1898
57	R. McG.	23	Left ectopic unruptured; right pyosalpinx; acute gonorrhea.	"	"
58	— M.	26	Right ovarian cyst; bilateral pyosalpinx	"	August, 1898
59	M. M.	23	Right broad-ligament cyst; left pyosalpinx.	"	August, 1897.
60	M. N.	27	Ruptured ectopic; free blood in pelvis; sapremia; left pyosalpinx.	"	January, 1898.
61	A. P.	38	Diffuse pelvic suppuration	"	July, 1898.
62	M. P.	25	Right pyosalpinx; left hydrosalpinx; large subperitoneal cysts, etc.	"	September, 1898.
63	B. P.	32	Chronic metritis; repeated hemorrhages; large cystic ovaries; sclerosed occluded tubes; curettage failed to relieve pain and bleedings.	"	August, 1897.
64	B. R.	20	Purulent salpingitis, left; pachysalpingitis, right.	"	November, 1896.
65	L. R.	34	Diffuse pelvic peritonitis; occluded tubes; old, dense adhesions due to puerperal pelvic lymphangitis	"	November, 1897.
66	A. R.	39	Right unruptured ectopic; left pyosalpinx.	"	February, 1898.
67	P. R.	43	Genital sclerosis with uterine hypertrophy (rare); multiple pelvic adhesions; curetted one year ago; ill since.	"	March, 1898.
68	M. G. R.	26	Laparotomy in Philadelphia; drainage seems to have been used; sepsis; large broad-ligament cyst; purulent salpingitis.	"	June, 1898.
69	A. R.	36	Vaginal operation three years ago; has right suppurating ovarian cyst nine inches in diameter; general acute pelvic peritonitis; pyosalpinx.	"	December, 1897.
70	L. S.	24	Many gonorrheas; repeated curettages; multiple adhesions; genital sclerosis.	"	November, 1897.
71	M. S.	23	Bilateral pyosalpinx; vaginal incisions elsewhere.	"	May, 1898.
72	B. S.	30	Bilateral pyosalpinx	"	June, 1898.
73	R. S.	24	Very large bilateral ovarian abscesses. . .	"	August, 1898.
74	I. S.	39	Old chronic tubo-ovarian disease; sclerosed tubes; many adhesions.	"	May, 1897.
75	P. S.	19	Bilateral pyosalpinx	"	September, 1898.

No.	Initials.	Age.	Reasons for operation.	Result.	Time.
76	E. T.	26	Bilateral pyosalpinx; uterine fibroids seven inches in length.	Cured; sharp bleeding third day; opened belly to find cause; none found.	January, 1898.
77	M. T.	30	Bilateral pyosalpinx.. .. .	Cured....	December 1896.
78	M. W.	42	“	“	June, 1898.
79	M. W.	33	Left ovarian abscess; right pyosalpinx..	“	January, 1898.
80	M. W.	26	Bilateral pyosalpinx; tubo-rectal fistula.	“	August, 1898.
81	K. Z.	24	Right ruptured ectopic; pelvic suppuration; left adnexa removed by laparotomy, 1895.	“	October, 1897.

ABDOMINAL SECTION SOME THREE MONTHS AFTER VAGINAL SECTION.¹

BY

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ON my return from my summer vacation early in September a young woman presented herself at my office with a note from a friend in New York who is actively and successfully engaged in gynecological practice. The note informed me that the case had been operated upon by himself by vaginal section. It read as follows. “A case of diffuse pelvic suppuration; cul-de-sac opened; pelvic Mikulicz drain; temperature at time of operation 102°, etc. About time for a radical operation, if it is to be done at the elective time at all.”

The young woman gave the following history: The operation had been done in New York some three months before. She was under treatment by the operator from the time of the

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, October 20, 1898.

operation to the time she changed her residence to Philadelphia. Her physician then gave her the above-quoted note and advised her to consult me.

I found from close inquiry that her history was in all respects similar to the general run of histories in cases of long-standing pelvic inflammation. An examination revealed a condition of general pelvic adhesions and enlargement as well as displacement of the uterine appendages. There remained at the seat of the vaginal incision a mass of granulations, which was exceedingly tender to the touch and which bled freely when handled.

For the matter of a month I had the vaginal condition treated, in order, if possible, to have it healed before proceeding with the abdominal section; the wound is still unhealed.

Some seven or eight days ago I opened the abdomen and cleaned the pelvis by performing a hysterectomy, removing both sets of appendages, and the uterus below the internal os. The specimens are here presented for your inspection. You will see that the condition is one of double hydrosalpinx and double ovarian cysts. Both tubes are distended with the ordinary hydrosalpinx fluid and the fimbriated ends have become obliterated. In addition to this you will observe that the organs show the remnants of universal adhesions. The ovaries, as you see, no longer exist, their place being taken by these cysts; one, before it had collapsed, was as large as a hen's egg. The cysts are also covered with remnants of adhesions, as you will observe. The surfaces, especially the posterior, of the uterus show the same condition of adhesion. I may add that the vermiform appendix was involved in the pelvic mass, and it, together with the mesentery, had to be freed from its attachments.

This patient is one of three whom I have seen this fall, all of whom had vaginal operations of one kind or another, and all of whom remain in such a condition as to require an abdominal section for their cure. The vaginal operation is so often an incomplete one, even when performed by an expert operator, that one should consider seriously whether he is justified in adopting this procedure in such cases, for instance, as the above.

Here is a woman seriously ill who applies for relief, or more properly, I should say, for a cure. She is put to the risk of an operation as well as expense both financially and as to time. Is a measure which is in many cases but a temporary expedient a proper one to adopt? From the vaginal operation she can

expect but a relief of symptoms, and the certainty of a second operation is before her. I say she can only expect relief and not cure, because this case is one of those in which the consequent vaginal operation is an impossible one, provided the operator has any consideration for the result to the patient. Why, then, should she be put to the risk of a second operation when in the first instance an abdominal section could be performed and a cure accomplished? And why, if a second operation is to be made, should it be complicated by the possible bad result of a first one, as in this case? A suppurating vaginal wound which has not and will not heal is not altogether pleasant to contemplate when considering an abdominal section. It seems to me the position of the vaginal operator is altogether illogical and must eventually be abandoned.

This patient was operated upon originally by one of the best vaginal operators in this country, and consequently the results must be attributed, not to the operator, but to the operation. The increasing number of such cases reporting for further and final surgical treatment is becoming embarrassing, and it behooves the vaginal operators to offer some legitimate reason for this state of affairs or to return to the complete operation of abdominal section.

OVARIAN CYST PROTRUDING THROUGH THE INGUINAL CANAL.¹

BY

J. M. BALDY, M.D.,
Philadelphia.

FEBRUARY 22, 1898, Mrs. Sarah D. was sent me from Harrisburg for diagnosis and treatment. About two years previous to her coming to Philadelphia she had noticed a small, pedunculated tumor in the right inguinal region, which continued to grow until as large as an egg. She was placed under an anesthetic by her physician and the tumor removed. He tells me that the growth had a reasonably small pedicle, which came from the inguinal canal, and that he amputated it as low down as possible.

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, October 20, 1898.

One year later the growth had again returned, much larger and with a shorter and broader pedicle. A second time she was placed under an anesthetic and the growth removed as in the first instance.

When I saw her the growth had returned at its former site, was as large as one's fist, with apparently no pedicle at all. Palpation showed it well above the large vessels on the thigh, although it hung suspiciously near them. Yet I could readily pass my fingers between the lower margin of the tumor and the vessels. A pelvic examination revealed a mass filling the right side of the pelvis, indefinite as to its outlines and consistence. The uterus had a limited amount of mobility. The general health of the patient was quite good and no general signs of malignancy existed.

The patient was prepared for both an enucleation of the tumor in the groin and an abdominal section. An incision was made directly over the growth and the tumor freed from all surrounding connections down to a thick, broad, and short pedicle which led into and through the inguinal canal. The attachments of the pedicle in the canal were freed and the finger forced into the abdomen, where it was found that the tumor was a continuation of a large intra-abdominal mass. The abdomen was opened in the median line and the pedicle of the inguinal growth found to spring from a large intraligamentous tumor of similar character. The opposite uterine appendage was healthy. It was at once observed that the most feasible way to make the removal was to ligate the left broad ligament and amputate the uterus at the neck. The woman being at or past the period of the menopause, this course was pursued, and the tumor lifted out of its bed with little or no effort—in fact, after the uterus was amputated the tumor was enucleated by its own weight and a slight amount of sponging. All oozing points were covered over with redundant peritoneum by means of catgut sutures and the abdominal incision closed without drainage. The inguinal canal was of course enormously dilated. Its edges were freshened with knife and scissors, and approximated with several rows of continuous silk sutures, which were allowed to remain permanently. The skin was united by a subcutaneous silk suture.

The patient made an uninterrupted recovery and left the hospital for her home four weeks after the operation.

THE ADVANTAGE OF INTESTINAL DRAINAGE IN CERTAIN
CASES OF APPENDICITIS AND OTHER ABDOMINAL
INFLAMMATIONS.¹

BY

EDMUND M. POND, M.D.,

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In my article upon "Appendicitis" in the *Medical Record* of April 23, 1898, I drew the following conclusion: That in bad cases of appendicitis, when the abdomen is filled with pus and the intestines are paralyzed by over distention, morphine, and infection, an opening into the intestines to promote intestinal drainage will be a benefit. I report the following case in detail as another example of the benefit of intestinal drainage in this class of cases.

Wednesday, August 24, 1898, Dr. Newell saw P. A., who gave the following history: She was 10 years old; her previous history was good. A few days before she had a mild diarrhea that continued to the time of the doctor's visit that evening. During the day she had had several attacks of vomiting and diarrhea, with rectal and vesical tenesmus; that evening her temperature was 103.6° and the pulse was 112. She had headache with nausea, and was restless and ached all over; the tongue was coated; tenderness was present over the epigastrium, and slight tenderness over all the abdomen; no localized tenderness was present in the lower abdomen. Thursday morning the temperature was 100° and the pulse was 90. No pain or tenderness was present except over the epigastrium; she had had two or three loose stools from calomel given the night before. During the day her small brother gave her a bag of oranges and she ate very freely of them. That night she was restless and had colicky pains. Friday morning the temperature was 102.6° and the pulse was 120, the abdomen was distended, and diffuse tenderness was present. Castor oil was given by the mouth and cleansing enemas ordered. She vomited during the day. That evening the temperature was

¹ Read before the Rutland County Medical Society, at Rutland, Vt., October 11, 1898.

104° and the pulse was 130. Saturday morning she was removed to the Rutland Hospital.

When seen by me that morning at 10 o'clock her condition was as follows: She was semi-conscious, but would answer questions correctly when aroused; the pulse was thready, from 130 to 140; the temperature was 102.6° and the respirations were shallow; the breath was offensive and the tongue heavily coated. The facial expression was bad, but she did not have the sunken eyes and pinched face noted in some cases. The abdomen was enormously distended, tense, hard, and extremely sensitive over its whole area; marked rigidity of all the abdominal muscles was present, but more rigidity, pain, and tenderness were present over the right iliac region. A diagnosis of appendicitis with general suppurative peritonitis was made and but little hope offered from an operation. The father requesting an operation, arrangements were made for 2 o'clock of the same day. During this time the little patient failed very rapidly, and at the time set for operation her condition was as follows: The pulse was 140 to 160, thready, intermittent, and often absent; the respirations were shallow and the patient was unconscious. I felt guilty in operating upon the dying child, but arrangements having been made, and at the father's request, ether was started. After taking but little ether the child seemed dying. She was pulseless, was gasping, and the sterno-mastoid muscles were fixed. Dr. Hammond, who was giving ether, said: "Your patient is dying, doctor." Nitrite of amyl was substituted for the ether, and hypodermatics of brandy were used as fast as the syringes could be filled. Strychnia, nitroglycerin, and digitalin were also used by hypodermatic injection. While this was being done a rapid incision was made into the peritoneal cavity, which was found filled with pus, fully two quarts being removed; it was very offensive and had a fecal odor. The intestines were enormously distended, adherent, covered in places with white lymph and in other places fiery red. As soon as the abdomen was opened the irrigating tube with hot saline solution was introduced; this gave the first signs of reaction; the irrigation was continued throughout the operation. The cecum, being firmly glued into the abdomen, could not be liberated, so by the sense of touch the appendix was located, ligated, and removed from deep in the abdomen. Gauze drains were carried in different directions. A distended loop of small intestine a few feet from the ileo-cecal valve was then brought into the wound, stitched

to it, and incised; the irrigating tube with hot saline solution was then carried into the intestines and the bowel above and below the incision thoroughly unloaded. A large amount of orange pulp and fecal matter was removed; I dare not say how much, but it seemed quarts. The intestinal irrigation was kept up for some time, while the other stimulants were used as above stated. After filling the intestine above and below the fecal fistula with hot saline, a compress was applied and the patient put to bed.

The first decided reaction was noted when the intestine was opened and filled with hot saline. Hypodermatics of brandy, strychnia, and nitroglycerin, as well as inhalation of nitrite of amyl and stimulating enemas, were used during the next twelve hours. That evening the intestines were again washed out through the fistula and filled with hot saline solution. The patient barely lived through the night. The next morning (Sunday) she was a little brighter, although semi-conscious and with a thready pulse. The abdomen was enormously distended and the gauze drains were acting but little. Thinking the gauze pressed upon the intestines, interfering with intestinal drainage, it was removed and the intestines again flushed with hot saline solution. Calomel had been given in twenty-grain doses, and was twice repeated during the day, but no action was obtained. The abdomen in the evening was as hard as a board, the respirations were shallow, and the patient was again failing. One drop of croton oil was now given and was repeated after a few hours. During the night the fistula began to discharge freely and the distension of the abdomen to go down. During the following days the bowels were kept open by saline and calomel, as well as by rectal flushings and irrigations, night and morning, of hot saline through the fistula. The distension gradually went down. From the hour the fistula began to discharge freely there was a change for the better, and when for a few hours it did not discharge she was worse. The patient made a slow convalescence and is at the present time eating well and gaining daily in weight. She is able by assistance to walk around the hospital. The fecal fistula discharges freely, and she is also having formed movements per rectum. As soon as the patient's strength will permit, a resection of the intestine, with anastomosis, will be performed.

In this case, with an artificial opening in the small intestine, it took sixty grains of calomel, two drops of croton oil, and repeated large saline irrigation through the fistula to move the

bowels. Had the artificial opening not been made the bowels would never have moved and the patient would have died.

From the above case, and cases already reported in my article in the *Medical Record* of April 23, 1898, I draw the following conclusions:

1. That almost hopeless cases of appendicitis will sometimes recover by operation.

2. That hot saline irrigation into the peritoneal cavity is a stimulant as well as a cleansing agent, and in bad cases should be kept up during the whole operation.

3. That opening the intestines and washing them out at the time of the operation, and afterward filling them with hot saline solution, is a life-saving measure; that in no other way can the intestines be unloaded in time to save life; that it offers a means of introducing stimulants and saline solution directly into the small intestine; that by unloading the intestines peritoneal drainage by absorption is increased.

4. That intestinal drainage is of more value in these cases than drainage by tubes and gauze.

5. That if this means be adopted in cases of general suppurating peritonitis and where the bowels are paralyzed by morphia or sepsis, whether due to appendicitis or other condition, and where immediate intestinal evacuation is urgent, many cases now considered hopeless will recover.

29 SOUTH MAIN STREET.

PERITONITIS—CAUSE, TWISTED OVARIAN PEDICLE.¹

BY

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Philadelphia.

IN the many factors in the causation of peritonitis, a gangrenous sac wall, the result of a twisted ovarian pedicle, must be included. The early recognition of the cause of this type of peritoneal inflammation is most important, as the life of the patient depends upon the institution of early operative interference. The diagnosis of the condition is not always made with the degree of certainty we should like, especially if, in

¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, October 20, 1898.

the presence of a decidedly tympanitic and rigid abdomen, we have no knowledge, or means of obtaining such, of the patient's previous condition. When it is known that a woman has an ovarian tumor and is suddenly stricken with peritonitis, the likelihood of a twisted pedicle should be suspected.

B. M., æt. 28, married. Family history: Father and mother living and well; one sister living and well; one brother living and in good health. Previous personal history: Always of a neurotic, excitable disposition. For some months previous to admission to the Chester County Hospital, under the care of Dr. C. E. Woodward, she resided in a malarial district along the Delaware. Had a severe attack of malaria a few months ago; from this she partially recovered and came to West Chester to recuperate. After being in the above place two weeks and enjoying fairly good health, she was taken with the present illness.

Present illness began September 20 with violent, cramp-like pains in the abdomen, accompanied by a rise of temperature and tenderness on pressure in the lower right side of abdomen, with increased rigidity of this side, vomiting and constipation, and the presence of a tumor. Three days before admission to the hospital the patient was seen by Dr. Harry Deaver with Dr. Woodward and the diagnosis of ovarian cyst confirmed. Operation was deferred on account of the woman's general condition. She was also four months pregnant.

After she was seen by Dr. Deaver, September 22, she had a sharp attack of peritonitis, suffering much pain, abdomen extremely distended. No motion from the bowels. She was given calomel, magnesia sulphate, and enemas without effect. A rectal tube, however, passed far into the colon, brought away quantities of gas, the retained enemas, and some feces, relieving the pain and distension entirely. This was repeated for about three days, when the bowels began to act voluntarily.

On admission to the hospital, September 24, 1898, her general condition continues about the same. Temperature rather lower than at the beginning of the attack. She continues to have pain, mostly in paroxysms, which last from a few minutes to several hours, and seem to be very severe, but it is difficult to judge how far the hysterical element enters into these. The abdomen is much distended and tympanitic, with an area of dulness corresponding to the position of the cyst in the lower right part and extending to the symphysis pubis. The bowels are constipated. Mild aperients have failed to open them.

An enema of turpentine with castor oil in egg yolk and salt solution produced one small movement of the bowels on the day before admission; this was repeated on admission.

October 10 I saw her and operated. She suffered pain through the night and did not sleep. Abdomen tender. There was sick stomach; pulse weak. She looked badly. When I saw her I was able to make out nothing more than a peritonitis. Percussion of abdomen revealed nothing more than the enlarged uterus. From what Dr. Woodward told me I was convinced that the cause of the peritonitis was a twisted ovarian pedicle.

Operation.—The only point of interest in the operation was that the cyst, which was small, with a long pedicle twisted three times upon itself, was tucked up under the mesentery of small bowel. Since operation she has done well; only once a suspicion of a miscarriage, which half a grain of extract of opium suppository quieted. The abdomen has been soft and not painful to touch since the operation.

The following history was given me by Dr. Gifford, of Avondale, Pa.: Mrs. L. M., 52 years, white, married; childless; very nervous temperament; not yet past the menopause. Suffered during September, 1895, with an attack of what I diagnosed as pelvic inflammation, with fever, tenderness, constipation, and some swelling in right ovarian region. Symptoms all subsided under treatment consisting of rest in bed, salines, douches, and hot applications, followed by blister over lower right side of abdomen. Patient regained usual health and continued so, with exception of some slight soreness and occasional pain in side, until September 1, 1896, when, after a long drive, she was taken very suddenly with severe pain in right side of abdomen, low down; attack attended with vomiting and extreme tenderness. Dr. West was called and prescribed laxatives (I think salines) and administered morphia hypodermatically. The patient recovered sufficiently in four days to drive to her home, a distance of six miles, and I saw her on the evening of the next day. At that time there was not very much pain, but considerable tenderness and a very palpable tumor the size of two closed hands. I was of the opinion that the case was one of appendicitis, as was also held by Dr. West and also by Dr. Ewing, who saw her on the 7th of September at my request. Dr. Deaver operated on September 9, and found ovarian cyst with twisted pedicle, black and almost

gangrenous. Patient recovered very nicely and has had fair health since.

Mrs. M. McC., age 50, married; has always enjoyed good health until lately. Reached her menopause three years ago; since that time has not been as well as formerly. For the last several months she noticed that the abdomen was getting gradually larger. Six days before admission to the German Hospital the patient was suddenly taken with severe pain in the left side of the abdomen. The bowels became constipated and did not move until the time of admission. The abdomen was distended, rigid, and painful to touch. Dulness on percussion in left flank. Vaginal examination revealed a fluctuating tumor to left of median line. Diagnosis, peritonitis caused by twisted ovarian pedicle.

Operation revealed the presence of an ovarian cyst twisted upon its pedicle, with gangrenous walls. Patient died of peritonitis.

The case of which I have no history was one occurring in the practice of Dr. Taylor, of Beverly, N. J. This patient had been seen by Dr. Pugh, of Burlington, N. J. Diagnosis doubtful, but in favor of peritonitis caused by abdominal tumor. Operation revealed a gangrenous ovarian cyst wall with twisted pedicle. Recovery prompt.

In three of the four cases I report, the question of peritonitis of appendical origin was considered. In the other of the four cases the probable diagnosis was peritonitis due to intestinal obstruction, until a vaginal examination revealed a fluctuating tumor. Had the pedicle of the tumor in this case been long, thus allowing the tumor to occupy the abdominal cavity proper, and nothing known of the previous history of case, a probable diagnosis of twisted pedicle would not have been made. That a small ovarian cyst may occupy the pelvic cavity and be confined there, as it were, by the intra-abdominal pressure, those of us who have had a large experience in this class of cases well know. I have seen this condition so pronounced as to render quite as difficult to dislodge the swelling as in some cases of uterine fibroid so placed.

ECTOPIC GESTATION ASSOCIATED WITH PRIMARY TUBERCULOSIS OF THE FALLOPIAN TUBE.¹

BY

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Philadelphia.

(With one illustration.)

IF we accept the term ovarian pregnancy, we are compelled to admit the possibility of the development of the product of conception upon the substance of the ovary. That such an occurrence is possible has been admitted by most embryologists. The moment the Graafian follicle ruptures, and before the ovum has escaped, the spermatozoa may find entrance into the sac and impregnate the ovum; for it is generally admitted that the spermatozoa not only find their way throughout the whole course of the oviduct, even in tubes that are so altered by disease or deformity as to offer insurmountable obstructions to the ovum, but that they may also reach the surface of the ovary or become lost in the abdominal cavity.

Should the impregnated ovum then fail to escape by reason of the rent in the sac of the Graafian follicle becoming closed, there would seem to be nothing to prevent its subsequent growth until, by reason of its size, it burst through the sac and so escaped. The sac of the Graafian follicle may become closed by blood clot, by reason of adhesions the consequence of old-standing pelvic inflammatory disease, or by a plug of fimbria from the ampulla of the tube. Under such circumstances the vitalized ovum would develop within the sac of the Graafian follicle, and at the end of the third month, unless it had escaped by reason of a second rupture of the sac, it would form its attachment within the follicle upon the stroma of the ovary. This would constitute a true ovarian pregnancy. Theoretically such an occurrence is possible, though no well-authenticated case has as yet been reported.

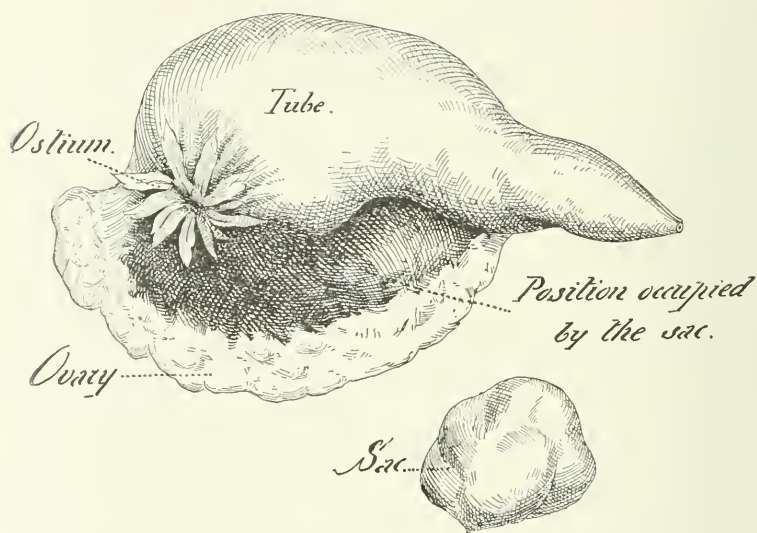
¹ Read before the Section on Gynecology, College of Physicians of Philadelphia, October 20, 1898.

On the other hand, cases of tubo-ovarian pregnancy, by which is meant the development of the product of conception between the ampulla or abdominal ostium of the tube and the ovary, are not uncommon. The ovum, becoming impregnated within the sac of the follicle or immediately upon its escape, finds lodgment upon the surface of the abdominal ostium or upon a fimbria and goes on to development in this location. Such appears to be the nature of the case about to be reported, and attention is drawn to the existence of a long-standing primary tuberculosis of the Fallopian tubes as a determining cause of the condition.

Mrs. A. T. applied for treatment on March 11, 1898. She was 31 years old, had been married eight years, and was sterile. Her maternal grandmother, who died of cancer of the stomach, had eleven children, all of whom are living and well except the patient's mother, who had valvular disease of the heart and died during an attack of typhoid fever. Her father was one of a family of thirteen, all of whom died of pulmonary tuberculosis except two who are now in bad health. He died, at the age of 45, of phthisis, after an illness of three years. The patient enjoyed fairly good health until a few years ago, when she began to experience more than usual pain at the time of her menstrual periods. They were scanty, occurring too frequently, however, and always associated the first day with severe bilateral pelvic pain and backache. There had been no leucorrhea. During the five weeks previous to my seeing her she had frequent attacks of sharp, shooting pelvic pain, agonizing in character and mostly on the left side. There was much nausea, vomiting, and some tympany. Four times during the previous five weeks she had a flow of blood from the uterus, each time lasting two or three days. At these times all her symptoms were exaggerated. The flow was free and contained clots, and during the intervals there was an offensive discharge, sometimes thin and brownish, and again thick and pink. Upon examination the uterus was found somewhat enlarged, in good position, but not freely movable. Both tubes were thickened and apparently adherent. The tube and ovary could not be differentiated on the left side, but a large, tender, oblong mass was felt in a high position, closely incorporated with the cornua. There was slight congestion and blueness of the external genitals, and the patient complained of some soreness of the breasts and tingling of the nipples. She admitted the possibility of pregnancy and seemed to think such was the case. The diagnosis of extra-

uterine pregnancy was made, and on March 14 celiotomy was performed.

Portions of omentum, adherent to the anterior parietes, the fundus of the uterus, and to the bladder, required careful dissection and ligation in several places. The left tube and ovary formed a large mass universally adherent to the pelvic walls, the sigmoid, and to the posterior surface of the uterus. The tube throughout its length was much thickened, and it completely surrounded and covered the ovary, which was pro-lapsed, flattened, and lay between the apparently closed ostium and the base of the broad ligament. Between the enlarged and nearly closed ostium and the ovary was found a round



sac, three-quarters of an inch in diameter, having a capsule which seemed to be continuous with the ovary and with the surface of the ostium of the tube. This sac was slightly torn on its under surface, and below it, lying in the bottom of the pelvis, partially surrounding the sigmoid, a recent blood clot was found. The sac contained a semi-solid, partially organized blood clot and had the appearance of a gestation sac. The tube was very much thickened and club-shaped at the ostium, which, upon careful search, was found to be patulous. The accompanying drawing may serve to show the relation of the gestation sac to the ovary and tube.

On the right side the tube and ovary were enlarged and

generally adherent, showing a chronic inflammatory process. Double salpingo-oöphorectomy was performed. The wound was closed without drainage, and the patient made a rapid and uninterrupted recovery.

The pathological report of the specimens is as follows: The left ovary and tube contain between them a small sac about the size of a cherry. The wall of the sac was torn in several places during the operation. It contains a well-organized blood clot, but no trace of an embryo. Its macroscopic appearance and its position between the infundibulum and the ovary suggest the possibility of its having been the product of a tubo-ovarian gestation. The ovary is shrunken and flattened, and no cystic follicles or traces of corpora lutea are seen upon its surface. It measures one and one-eighth inches in length, five-eighths of an inch in width, and three-eighths of an inch in thickness. The tube is enlarged, thickened, and very hard to the feel, and has a smooth surface, with the peritoneal surface tightly stretched. It is considerably dilated in its outer two-thirds and measures two inches in length and five eighths of an inch in diameter. On section the tubal wall is found to be greatly thickened, with a firm, fibrous appearance. The lumen would scarcely admit a pinhead, and the walls have a yellowish, caseous appearance, which extends into the surrounding tissue about one-sixteenth of an inch. In several cross sections small yellowish areas, resembling military abscesses, are seen in the thick substance of the tube wall. The abdominal ostium is contracted, surrounded by a few short fringes, and will admit of a match-stick.

The right tube and ovary are somewhat larger than the left and have the same general appearance and consistence.

On microscopic examination the most striking features of the tubal cross sections is the almost complete obliteration of the epithelial lining. In the majority of sections not only is the lumen obscured, but the tubal mucosa is entirely replaced and the walls invaded for a considerable part of their thickness by closely packed round cells. Throughout the inner third of the left tube the lumen is still patulous and remnants of the tubal mucosa are present, but the epithelial fringes have nearly disappeared, and where they still exist are fused together in a mass of small round cells. The outer and inner circles of muscular fibres are distinct and easily discernible, but the interlying tissue is completely permeated with a small round-celled infiltration. Small nests of round cells between

the bands of muscle fibres are found throughout the entire thickness of the tubal wall and immediately beneath the peritoneal coat, indicating the presence of a very acute inflammatory process. Areas of necrosis resembling miliary abscesses are numerous. Within the outer zone of muscular fibres, and beneath the basement of the tubal mucosa, numerous miliary tubercles are seen, hazy in appearance, the cells poorly stained and ill-defined, containing giant cells of considerable size, their nuclei arranged in a semicircle at the periphery.

Evidences of calcareous changes in the tubal wall, in some cases surrounding the tuberculous foci, are apparent, and suggest that a recent infection and an acute inflammatory process has been engrafted on a latent tubal tuberculosis, rather than that the tuberculous process is of recent origin. Sections of the gestation sac show only fibrin and organized blood clot.

While the above report does not clearly prove the existence of an ectopic gestation in this case, the position in which the sac was found, its intimate relation with ovary and tube, its contents and the presence of a recent blood clot free in the pelvis, associated with the characteristic symptoms of extrauterine pregnancy, seem sufficient grounds upon which to base a diagnosis. Primary tuberculosis of the tubes had evidently existed for several years. The left tube being sufficiently patulous to permit the passage of spermatozoa throughout its length, the ovum was probably impregnated immediately upon the rupture of the Graafian follicle, and, not being able to proceed further by reason of the condition of the tube, implanted itself upon the surface of the infundibulum or upon a fimbria, and went on to development until it finally ruptured at about the end of the fifth week.

112 SOUTH SEVENTEENTH STREET.

TUBERCULOSIS OF THE BREAST, WITH REPORT OF A CASE.

BY

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TUBERCULOSIS of the breast is no longer considered a very rare disease. This, however, has not always been the case. Before the year 1881 the descriptions which have come to us of

it have been scattered and vague, and it was generally supposed that the mammary gland was immune to this infection.¹ Sir Astley Cooper² speaks of "scrofulous tumor of the breast," and he and others have cited cases which, in the light of our more recent knowledge, we can scarcely doubt were instances of tuberculosis. Cornil, Ranvier, Virchow fully denied the existence of the disease. In 1881 Dubar³ wrote his well-known thesis on the subject, and since then many good descriptions both of its clinical and histological aspects have been published. With a more general recognition the report of cases has increased rapidly, and it is fair to say that the disease will take its place in our text books and be recognized by the profession as are now carcinoma and simple mastitis—in fact, the more recent text books devote some little space to it. Scudder⁴ has collected in all about eighty cases—all that can be found in the literature. Twenty-three of these he has rejected because of insufficient proof. Since then Warden⁵ has added a case, Ferguson⁶ two, and Freiberg⁷ one.

The disease is distinctly one of young adult life. No cases are reported before puberty; the oldest was a woman of 53. The majority occur between 20 and 35. A few have been reported in men, but only a few. Pregnancy and lactation seem to favor it, but many instances have been in young unmarried girls. There are three recognized modes of infection⁸: first, directly through the milk ducts or tissues; second, by extension from neighboring infected tissues; third, by metastasis. The last-mentioned is the most common, next in frequency the first, while the second is rare. Dubar³ distinguished two forms—a disseminated and a confluent. He was supported in this view by several other observers. It is difficult to make any such distinction. The clinical picture varies with the time at which it is seen, with the extent of the infection and the integrity of the tissues involved. One case may present simply a nodule, another a general involvement of the whole gland, another one or more abscesses around which we find much tubercular tissue. Axillary involvement is present in the majority of cases, but not in all. Clinically the disease presents the history of a chronic inflammation of the breast attended with tumor, pain, and tenderness. Upon examination one feels the breast to be hard, nodular, with possibly a superficial or deep-seated fluctuation if the process has gone far enough. The mass or masses are not sharply outlined, and when the disease is advanced we may also have fistulæ which

do not heal. As before stated, the axillary glands are usually enlarged. Before taking up the diagnosis it may be well to cite the following case, which came under my care last June.

Miss J., age 22, single. Mother died of phthisis; otherwise family history negative. When about 14 years of age she reported having had some little pain in the left breast. This lasted about a year and was not severe. Otherwise she had been in good health until about a year ago. At this time she noticed a slight swelling under the left arm, which gradually increased in size, was somewhat painful, and, as she said, "travelled toward the breast." The breast itself became enlarged, and as it did so the swelling under the arm decreased. The breast increased slowly in size and became more and more painful. Her general health was also somewhat affected. She lost in flesh and strength, though not to a very marked degree. Several weeks previously, after an application of poultices, a discharge had taken place near the nipple and several tablespoonfuls of thin, yellowish matter were evacuated. This was followed by partial relief. The breast had remained in about the same condition since then. Patient was fairly well nourished, rather pale. Red blood corpuscles counted 3,300,000. No leucocytosis. Examination of lungs negative. Examination of left breast showed it to be enlarged, especially in the upper left-hand quadrant. Swelling extended toward the axilla. General enlargement everywhere except in lower right-hand quadrant. Breast was hard, nodular, freely movable on underlying structures. The whole breast was very tender. Near the nipple, just to the outer side, tissues were somewhat puckered and discolored, showing where discharge had taken place; a small but shallow fistula. Nipple was somewhat depressed. Enlarged gland could be felt in the axilla. Several examinations of the slight discharge from the fistula disclosed no tubercle bacilli. Amputation of the breast advised, and carried out one week later. At this time no glands could be felt in the axilla, and the breast alone was removed. Several pockets of pus were opened. As the pus evidently was of long standing, it was thought best to close the wound without drainage. A week later, a slight swelling appearing at the lower angle of the wound (unattended by rise of temperature), a grooved director was inserted and several tablespoonfuls of dark blood evacuated. This, however, refilled, and a week later a small incision was made and the cavity packed. Patient was sent home. Slight suppuration took place, but the wound

healed later. When last heard from, early in October, she reported having gained rapidly in strength.

An examination of the specimen showed macroscopically several small pockets of pus in the centre of the mass, surrounded by thick walls of what seemed to be fibrous tissue. A report from Klebs Pathological Laboratory was, in brief, this: The macroscopical view of the breast, on cuts perpendicular to the surface, shows clearly that it is not carcinoma. It is an infection of the milk ducts. One might name it a periductitis. The ducts are surrounded by a very large amount of fibrous tissue, evidently of long standing. Microscopically one sees a fresher cell infiltration about the ducts, consisting of small round or elongated cells, with dark staining nuclei extending somewhat into the surrounding fibrous tissue. These seem to be fibroblasts derived with the tissue cells or emigrating from the blood. They have a well-defined but small amount of protoplasm. The contents of the ducts are nowhere separated from the surrounding tissues by a *membrana propria*. The contents consist of big epithelial cells, with large nuclei very much deformed and forming irregular-shaped masses connected with one another by longer or shorter prolongations so as to form a rough network. In the network we find fibroblasts, as in surrounding tissues, but in smaller numbers. The intervening spaces have been filled with substances soluble in alcohol—*i.e.*, fatty matters. Rarely we find these cells changed to multinuclear cells of the tubercular type. We could not detect a single tubercle bacillus. Notwithstanding, this is most likely a tuberculosis going on exclusively in the interior of the milk ducts. There exist tubercular processes in which the detection of the tubercle bacillus offers great difficulties, not only in very old but also in fresh spreading tuberculosis. I think such cases as I have found in testicular tuberculosis could be explained by the deficiency of fat in tubercle bacilli under some circumstances as yet unknown. We could accept the tubercular origin of this process as the most probable one. A letter a month later, after further study of specimens taken from the breast, says: "There is no doubt as to the diagnosis of your case—tuberculosis of the breast. I have made many sections and find typical tubercles—giant cells, surrounded by epithelioid cells and a mantle of small-celled infiltration. In new preparations I find giant cells and tubercles in every section. So histologically there is no doubt, and I am certain that by some patience and hard work we can find tubercle bacilli. If you

want us to do so, please let us know. We have stained some for tubercle bacilli unsuccessfully, but you are, of course, aware how difficult it is sometimes to find them in the tissues. As I said before, the fibrous tissue is most prominent and contains only here and there the remains of glandular alveoli, while the tubercles are distributed in large patches all through the fibrous tissue."

Diagnosis.—Although the failure to find tubercle bacilli might leave a shadow of doubt as to the correctness of the diagnosis, still the clinical history of the case, together with the close correspondence of the macro- and microscopical appearance of the specimen to reported cases, leaves no reasonable doubt as to the true nature of the process. The family history, the distinctly chronic nature of the inflammation in the breast of an unmarried girl in which no other cause can be assigned, the close similarity of its history to other undoubted tubercular cases, establish a diagnosis without reasonable doubt. The history would suggest that the infection took place from the axillary glands. We must assume, then, a retrograde lymphatic infection, which is, to say the least, a doubtful possibility. Reasoning from our experience with other tissues, it would be much more reasonable to assume that the breast was primarily affected but remained quiescent, while the axillary glands, affected secondarily, did not do so. This may be said of other similar reported cases. The infection of the axillary glands in the above-reported case was not necessarily in itself tubercular, but may have been caused by other micro-organisms. We could feel no glands at the time of the operation, and the axilla was not opened.

The diagnosis of these cases is of the most vital importance, since the method of treatment depends entirely upon it. A careful consideration, then, of the presenting phenomena is absolutely essential. The diseases which might have to be distinguished in the diagnosis are simple hypertrophy, chronic mastitis, syphilis, sarcoma, carcinoma. Practically the only ones difficult to differentiate would be chronic mastitis and carcinoma. When a discharge is present and contains tubercle bacilli the diagnosis is simple. Where no discharge is present, or where it does not contain bacilli, the diagnosis is more difficult. Scudder says tubercle bacilli were found in 29 cases either in the discharge or in the tissues. Knowing the difficulty often of finding them in other chronic tubercular processes, it would be fair to assume that in this instance also they

might be occasionally not discoverable, at least by any of the ordinary methods, either in discharge or tissue. Chronic mastitis is the most difficult of all to distinguish and would be in some cases impossible. Chronic mastitis is almost always associated with pregnancy, tuberculosis not necessarily so. The former is usually double, the latter single. Chronic mastitis is more circumscribed. Some cases which were formerly considered simple were undoubtedly tubercular. A chronic mammary abscess that showed little tendency to heal after evacuation would be suspicious of tuberculosis, and some such cases are undoubtedly tubercular. Carcinoma is a disease of later life. The breast is usually harder than in tuberculosis. An examination of the blood would generally reveal leucocytosis. The cachexia in the two diseases, if present, is different. If any doubt should exist, a section of the gland should be taken for diagnosis, since the operation must be a much more radical one than in tuberculosis.

Prognosis.—Where the breast is the only tubercular focus the prognosis is good, most reported cases having been entirely cured by operation. A few reported cases after operation have died later of some other form of the disease. Where, however, there are other foci, the prognosis will necessarily depend upon how susceptible to treatment these other foci may be.

Treatment.—The entire removal of all tubercular tissue should be the rule. Where the disease consists of a single abscess, thorough curetting, followed by good drainage, will prove effective in some cases. Where a small part of the gland is affected it might be advisable, if all tissue could be easily removed, to do so without removing the whole gland. Most cases, however, require total extirpation of the breast, together with the axillary glands if they are affected.

WONDERLY BUILDING.

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DIABETES MELLITUS AND CARCINOMA UTERI; HYSTERECTOMY; RECOVERY.¹

BY

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ASIDE from chapters in text books and from articles in the journals,² two books have been written which discuss the relations between diseases of the different organs of the body and those of the female genitalia.³ The special relation between diabetes mellitus and the diseases of the genital organs of women has been the subject of many publications. Two essays⁴ have recently been published which again treat of diabetes and diseases peculiar to women. From these it becomes apparent that, while many observations have been made and the matter carefully considered, a perfect harmony of opinion does not exist.

There are three relations to be considered: First, diabetes mellitus is the cause, and diseases of the genital organs the effect. Second, diseases of women are causing diabetes mellitus. Third, melituria is incidentally observed in women who are affected with some disease of their genital organs. So far as cases of the first class are concerned, we are all familiar with one series of affections of the external genital organs as due to melituria—namely, pruritus vulvæ, erythema and eczema, prurigo, furunculosis of the labia, vulvitis phlegmonosa. This causative relation is so strongly implanted in our minds that we invariably examine the urine for sugar whenever one of

¹ Read before the California Academy of Medicine, August, 1898.

² The full list of literature bearing upon this subject is to be found in the books and articles cited; no further mention of author and publication is therefore made.—DR. KR.

³ P. Müller: "Die Krankheiten des weiblichen Körpers, in ihren Wechselbeziehungen zu den Geschlechtsfunctionen, etc." Stuttgart, 1888. H. Eisenhart: "Die Wechselbeziehungen zwischen internen und gynäkologischen Krankheiten." Stuttgart, 1895.

⁴ Max Graefe: "Die Einwirkung des Diabetes mellitus auf die weiblichen Sexualorgane und ihre Functionen." Halle, 1897. Ludwig Kleinwächter: "Der Diabetes, vom gynäkologischen Standpunkt aus betrachtet." Zeitschrift für Geburtshülfe und Gynäkologie, 1898.

these affections is observed. That diabetes produces pruritus vulvæ is evidenced by the fact that the latter, as a rule, disappears under an antidiabetic régime and frequently persists tenaciously if local treatment only is instituted. The direct irritation of the sugar in the urine, and the inoculation of micro-organisms on the skin, were formerly accepted as the direct etiological factors; but at present the view finds more favor that pruritus vulvæ is a neurosis of the corium of the vulva and is on the same line with other neuralgic disturbances of the diabetics. What really produces this neurosis is not yet known. As a consequence of the scratching due to more or less violent itching, other affections of the vulva are ushered in, as mentioned before. No doubt, then, exists as to the causative relation between diabetes and pruritus, etc. Opinions, however, do not seem to be so uniform where the existence of atrophy of the genital organs and amenorrhea is concerned. The number of accurate observations is yet too small to enable us to reach conclusions. Some writers are inclined to admit that the more severe forms of melituria produce amenorrhea; whereas others believe that there is no difference, so far as the severity is concerned, but that amenorrhea is an initial symptom of diabetes. All publications make it appear possible that uterus and ovaries may become atrophied under the debilitating influence of diabetes, but that this is by no means the rule. Amenorrhea usually is caused by this atrophy, but may exist without it. It is evident that the diabetic condition may undoubtedly influence the female genital organs in many cases.

Do affections of the genital organs of women produce melituria?

This question may appear to many ridiculous, yet it has been the subject of earnest consideration. The influence of the uterus upon remote organs, such as the eye, the stomach, and the nervous system, has been thoroughly investigated. There are many physicians who believe in the theory of reflexes as originated in the female generative organs, their physiological action, and their pathological condition. It is argued, whether rightly or not I shall not try to decide, that pathological conditions of the genitals produce neuropsychoses in women. On the other hand, the influence of neuropathic disposition, of the morbid state of the nervous system, is considered by many as of importance in the origin of diabetes. Therefore pathological affections of the uterus or ovaries may develop diabetes. This.

purely theoretical speculation has not been well sustained by clinical observations. The mere presence of a retroflexed uterus in a diabetic woman can hardly be accepted as an etiological factor; even the single instance of a woman who had diabetes and a double pyosalpinx, and where the sugar disappeared from the urine permanently after removal of the diseased adnexa—even this case does not prove anything; there are many similar observations needed before the fact is proved. There remain, then, cases of coincidence of diabetes and diseases of women. This category is of decided interest to the gynecologist, since many of these diseases demand grave surgical interference. It is a well-known fact that wounds in diabetic persons heal slowly and that they are more exposed to infection than otherwise. The explanation of this fact is probably to be found in the lowered vitality, in the diminished energy and resistance of the tissue cells. On the other hand, the influence of the anesthetic upon the metabolism of the tissue is a great menace to life, even of those patients who at the time of operation are free from sugar, but who at some previous time have had melituria. Instances have been recorded where such patients died in diabetic coma soon after the performance of the operation. But, on the other hand, many operations have been and still are performed where none of these dreaded accidents happen.

I shall now give you the history of a case of carcinoma uteri in a diabetic woman where hysterectomy was successfully performed.

Mrs. L. went to Dr. Douglas Montgomery, who kindly referred her to me, finding some suspicious growths on the cervix uteri. On December 2, 1897, I saw the patient for the first time. She was about 60 years of age; had borne five children; had had one miscarriage; was in the menostatic state about twelve years. She had always been a healthy, active woman. In the last years she had repeated attacks of sickness, which the attending physician designated as inflammation of the bowels, confining her to bed for weeks. For some time she was declining in health. When, in our first conversation, I had gained her full confidence, she told me that she suffered dreadfully from a severe itching of her external genitals. The physical examination of the patient showed her to be of a robust frame with slight signs of cachexia. The vulva gave the characteristic appearance of pruritus; the uterus was slightly enlarged, freely movable; the os uteri was patulous,

and there was felt inside the os a velvety roughness and unevenness; parametria and adnexa were free. Examination by the speculum showed a number of crest-like excrescences in the cervical canal, which bled readily. There could not be any doubt about the malignancy of the affection. Urine had at the same time been drawn, and its examination proved that it contained sugar. An antidiabetic régime was at once prescribed, also a three per cent solution of carbolic acid to wash the external genitals with. When the patient returned in about a week the itching was entirely relieved. The decision what to do in this case was a rather difficult one. The malignant affection of the uterus seemed confined to this organ, and an attempt at its eradication appeared justifiable, but only if the complicating constitutional disease, the diabetes, proved to be amenable to treatment; it would be of little value to subject the patient to a capital operation if she was to die soon from the diabetes. I rested my decision on the change in the percentage of sugar in the urine. The amount of sugar grew quickly less, and I decided to operate. On the 12th of January, 1898, I performed vaginal hysterectomy with the aid of forceps. Chloroform was administered. I hurried as much as possible; the operation was easily done. Recovery was unusually prompt and rapid, and, after a very short stay in bed and hospital, patient went home. Immediately after the operation I cut open the uterus. I found that the epithelioma had invaded its walls close to the peritoneum, and from this I was sure that a relapse of the disease was only a question of time. For four months the patient felt very well; she had no symptoms from either carcinoma or diabetes; she kept up an antidiabetic diet to some extent; then she began to have pains in her right broad ligament, where an infiltration could readily be found; besides, she had an occasional slight hemorrhage. On the 6th of August, eight months after the operation, patient died. Frequent examinations of the urine were made; there was noticeable a steady decline of the amount of sugar, and some days after the operation, probably due to rest in bed, the sugar had entirely disappeared. The urine remained free of sugar most of the time afterward; at least, when examined, only an occasional occurrence was noticed.

As far as I can see, this is the first successful (as far as immediate result is concerned) hysterectomy for cancer in a diabetic woman.

1018 SUTTER STREET.

ECTOPIC GESTATION OCCURRING TWICE IN THE SAME
PATIENT.

TWO OPERATIONS AND TWO RECOVERIES.

BY

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(With one illustration.)

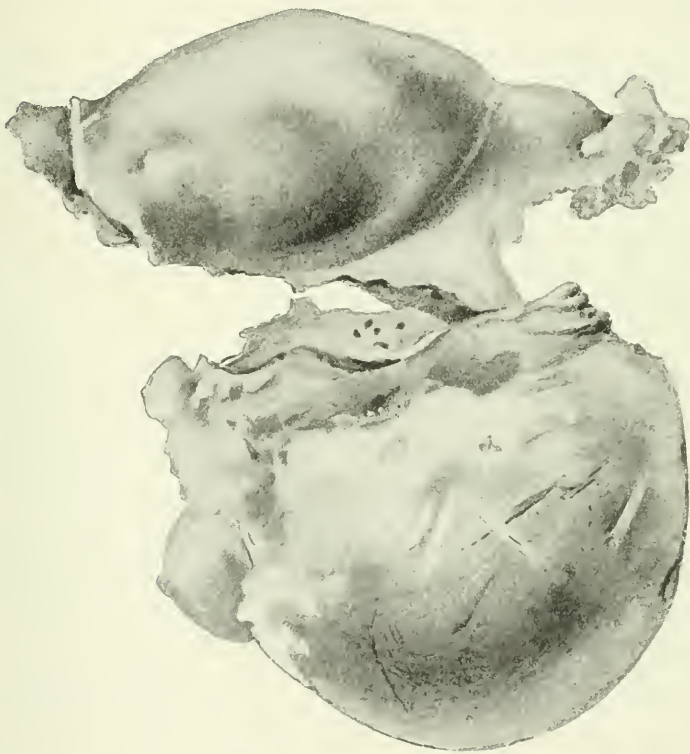
IN the February, 1896, number of THE AMERICAN JOURNAL OF OBSTETRICS I recorded a case of ectopic gestation occurring twice in the same patient, with two operations and recovery in each. After carefully looking over the reported cases I came to the conclusion that Dr. Theodore Meyer's report of ten cases could not be accepted in its entirety, and that out of the ten only those of Tait, Veit Jr., and Olshausen could be considered. In Tait's cases there was one operation and one autopsy; in Veit's case, two operations; in Olshausen's case, two operations; in C. A. L. Reed's case, two operations; and in my own first case, two operations. The other cases of Dr. Leopold Meyer, of Copenhagen, of Dr. Klettsch, Dr. E. Herman, Siegenbeck von Heukelom, Dr. Veit, and Dr. Block were omitted, owing to the uncertainty of the diagnosis. The condition was not absolutely demonstrated. I have had the strange fortune to again operate twice on the same patient for the removal of ectopic-gestation sacs.

Mrs. L., æt. 26, was nursing her child; the baby was 1 year and 5 months old. She did not miss a monthly period and was quite regular with her menstrual sickness, but began after one period to flow and continued to flow for four weeks. She then consulted her doctor—my friend Dr. Eadie, of this city—and he advised her to come back again if the flow did not stop. As he was leaving town for a holiday he left her under the care of Dr. T. F. McMahon. She went to see Dr. McMahon, and he, on examining her, found a small mass in front of the uterus and to the right side, and advised her to see me.

I found the left tube and ovary healthy, the right ovary normal in size, and the right tube, which was small at the uterine end, was enlarged at the outer end and lying in front of the uterus. We concluded that the case was one of extra-

uterine pregnancy and advised immediate operation. The patient consulted me in my office, and there was no evidence of rupture of the sac. She went into the hospital two days after and seemed to be in perfect health.

In my case book I find the particulars of operation as follows: Drew up the pregnancy in the right tube; no adhesions; tied off; found the abdomen full of blood, unclotted and tarry in appearance. The blood could be made to ooze out on pressure



on the fimbriated end of the tube. There was no rupture of the tube itself. The blood had evidently been oozing out drop by drop from this opening. The abdomen was washed out with hot water and a drainage tube placed. The water used at the time was allowed to run in too hot, owing to the carelessness of the nurse, and as a consequence slight peritonitis set in during the convalescence. The patient made an excellent recovery.

I did not see her again until September 27, 1898. I found

that she had missed a monthly period and gone a few days over. Irregular hemorrhage from the uterus then set in, accompanied by cramp-like pains in the lower part of the abdomen and chiefly on the left side. Drs. Eadie and McMahon saw her together, and on examination found a mass to the left side and behind the uterus. The ovary appeared to be close in to the uterus and normal in size. I examined her and found the same condition present. We decided that the patient was suffering from extrauterine pregnancy on the other side, and advised operation.

On the 28th of September, 1898, I opened the abdomen in the median line; found a cyst of the left ovary that had been mistaken for the gestation sac, and a mass in the tube that had been mistaken for the normal ovary. The illustration represents the condition. It was fortunate for her that she had this enlarged ovary, as it drew attention to the mass on the left side. The surface of the impregnated tube was covered with lymph, and on stripping back this lymph, after the specimen had been hardened, it showed that the chorionic villi were penetrating the tube wall and the wall would, as a consequence, have soon ruptured. The tube with the gestation and the diseased ovary were removed and the abdomen closed. There was no blood in the peritoneal cavity, as there had been no rupture. I took the opportunity of examining the right cornu, from which the other ovary and tube had been removed two years before. There was no evidence of ligature or stump of tube. The wall of the uterus was smooth from fundus downward, and there was nothing that would indicate that there had ever been either tube, ovarian ligament, or round ligament on that side. The patient made an uninterrupted recovery.

The case is reported on account of its rarity and with the hope that it may prove of interest to readers of the JOURNAL.

A CASE OF RUPTURE OF THE BODY OF THE UTERUS DURING CONFINEMENT: CELIOTOMY.¹

BY

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ON the 4th of March, 1896, I was called in consultation to see Mrs. K., age 27; she was suffering from puerperal insanity,

¹ Read at the meeting of the Mississippi Valley Medical Society, October 13, 1898.

it being two weeks since her confinement. Puerperal insanity being most frequently puerperal sepsis, I had her transported to Harper Hospital, where, after due preparation, I put her under the influence of chloroform and then thoroughly curetted the uterus, removing shreds and decomposing masses and remnants of the placenta. After thoroughly irrigating the uterus and drying it I swabbed it out with pure carbolic acid, applying the latter to every part of the lining membrane. Having thoroughly cleansed the uterus, I again had the patient placed in the strong room and had carbolized douches given every three hours. She immediately began to improve, and in two weeks recovered so that she could return home, and she has been in exceptionally good health since.

September 16, this year, late in the evening when I had another appointment, I was called up by telephone by Dr. J., saying, as I understood, that he had a rupture of the uterus during confinement; I told him I could not go, had a previous appointment with another doctor, and that he could sew it up himself, but if he did not want to there would be nothing lost by waiting till morning. The telephone did not work very well; I hardly understood him. Next morning he called me up again, when I went and saw the patient, and found Mrs. K., the woman whose case I have described in the opening remarks. She had a temperature of 101° , pulse 140 and weak, respirations 30 a minute, bowels distended, and constant vomiting. Vaginal examination, with introduction of the finger into the uterus, showed that there was a tear transversely across the posterior side, about the junction of the cervix and body of the womb. Through this tear a loop of the intestine projected—this accounted for the vomiting; the rapid pulse was evidently due to internal hemorrhage. I then got the following history:

Labor had been in progress about seven or eight hours; toward the last the pains had been strong and severe. The patient had complained a great deal and some chloroform had been administered. The progress of labor seemed normal. No obstruction existed, the pelvis was roomy, and everything indicated a quick and favorable termination, when the pains suddenly became more severe and the doctor intended to apply forceps. He administered more chloroform and examined her again, and then found that the head was shoved to one side, with the feet on the other side. This put another aspect to the case. He performed podalic version and quickly delivered the woman. Again introducing his hand, he was shocked

to find a hole in the posterior wall of the uterus; he, however, removed the placenta, cleaned the womb, bandaged her, and then called me. I could not come, as above stated, and, the woman being apparently in good condition, he thought it would not harm to wait till morning. This, in brief, is the history of the case.

The question for me was, what should be done? After due consideration it seemed to me that a celiotomy would give the woman the best chance. In the first place, the bowels had to be released; secondly, the hemorrhage had to be stopped either by sewing the womb or removing it entirely; and the third indication was to clean the abdominal cavity thoroughly, as it was probably more or less infected. The only other way would be to reduce the intestine, and it was doubtful to me if this could be done; and then the rest had to be trusted to Nature.

Quite a few cases that are reported have recovered after rupture of the body of the uterus, but the percentage of recoveries is so few that, in the light of our modern abdominal surgery, our plan of treatment would be celiotomy, with or without the removal of the uterus, according to the extent and position of the tear. I immediately sent for the ambulance and took her to Harper Hospital; had her quickly prepared, and, having her placed under the influence of chloroform, I operated. I opened the abdomen and found it filled with blood; found a tear across the uterus posteriorly. I thoroughly flushed the abdominal cavity with saline solution. Placing her now in the Trendelenburg position, I could inspect the extent of the tear. The intestine had been pulled out during the previous manipulation. The tear extended across the uterus and was low down in the pelvis; it was almost impossible to sew it.

On account of the danger of sepsis (which seemed already present, as indicated by the temperature) I thought the easiest, quickest, and safest way would be the removal of the uterus, leaving in the cervix. The operation was quickly performed, the peritoneal toilet made, and the abdomen closed, the whole operation taking thirty-five minutes. Two quarts of saline solution were injected into the rectum and the patient placed in bed. The shock was great, but with hypodermatic medication of strychnia, etc., she rallied partially, but finally again failed, and died fifteen hours after the operation from shock.

These cases are very rare—from one in five hundred to one in five thousand cases has been estimated; the average of the above numbers would probably be about right. If the operation could have been done more promptly, perhaps the result

would have been different, and still it was only ten or twelve hours after delivery that the operation was performed.

The cause of death certainly was hemorrhage from the torn uterus, and I think the prognosis depends upon the location of the tear. If the tear occurs in a part where the blood vessels are small, and if the uterus contracts afterward, the hemorrhage may be slight; but if the tear should involve the uterine artery or some of its large branches, and then if the uterus should not contract well but remain soft and flabby, the prognosis must be bad.

As these cases are rare I thought the report might interest the members, and discussion help to clear up some of the moot questions involved.

620 WOODWARD AVENUE.

A RÉSUMÉ OF ONE THOUSAND CASES OF LABOR.

BY

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EMINENT writers of all ages have lauded the value of experience. And truly, to see a thing, to handle it, to observe its behavior, to test its qualities by all our senses, are the best methods of knowing it. Verbal description, however graphic, only whets the appetite to know by personal contact. But the results of experience are often rendered valueless by imperfect observation, by inattention to details, or by lack of care in classifying results. Experience is valuable only when available, and available in the greatest degree only as it is recorded. Recording experience makes men careful observers, and careful observers, other things being equal, are our most competent men. This is especially true in the practice of medicine. The clinical manifestations of the same disease under different circumstances or in different individuals present so many and varied peculiarities that only experience and careful observation can determine whether we are dealing simply with different species of the same genus or with different genera of the same family, in place of making an error in the order or class. In no department of medicine do the beneficial results of carefully analyzed experience prove more helpful than in midwifery. To recognize the significance of symptoms promptly, to know

on the spur of the moment what can be done and what is likely to occur if left to Nature, is of the greatest importance. For the patient, her family and sympathizing friends, by a few moments' observation of a physician's behavior in the lying-in room, test the measure of their confidence in his ability to cope with presenting exigencies, and are immediately reassured or disheartened by their conclusions. How careful, then, should he be to know thoroughly and to sustain the greatest measure of hope, even when probabilities are the most adverse! More than once have patients remarked to me: "Doctor, I am really in a very bad condition, am I not?" On being told to the contrary as a matter of expediency, they would remark: "I know better, for I could see it in your face as soon as you examined me." How carefully, then, should we demean ourselves, when "the look of the face" betrays our conclusions!

As a slight contribution to the literature of obstetrics, I desire to present in this paper some conclusions drawn from a rather imperfect record of my first one thousand labors. In doing this I must rely to some extent upon my memory, since part of my earlier record was destroyed by fire. Consequently, when statistics are given, in every case the number of cases drawn from will be given. This experience covers a period of twenty-five years' practice, nearly all of which has been spent in gold, silver, and copper mining camps of Nevada and Montana. A large proportion of my patrons have been Cornish, Irish, and Italian miners and foreign-born laborers. I have the nationality of the parents given in 700 cases. They were: both parents foreign, 374; one foreign and one native, 158; both native, 168—total, 700. Thus it will be seen that in more than two-thirds of these cases the parents were either wholly or half foreign-born. In 936 cases there were: of multiparous women, 662; of primiparous women, 274—total, 936. Nearly one-third of the entire number attended were primiparous women. This perhaps may be explained by the fact that many poor people dispense with the services of a physician in accouchement after their first labors.

As to the sex of the children born in 938 cases, there were: boys, 489; girls, 449—total, 938. This very nearly accords with statistics given by some eminent authority, who sets down the proportion of boys at 107 to 100 girls. Infant mortality is slightly greater with boys than with girls, so that when maturity is reached Nature has provided for each bachelor a maid.

The duration of labor was noted in 700 cases. The average

time, as given by this record, is twelve and one-half hours. The lowest recorded time was half an hour, and the highest was ninety-six hours. I think some authority has stated that the average number of labor pains is about fifty. Am inclined to think this number is too low an estimate. With 700 of these mothers it was found that 165, or nearly one-fourth, had suffered miscarriages at some time in their married lives.

The presentation and position were accurately noted in 700 cases. Of these, 569, or 80 per cent, were O. L. A.; 61, or nearly 9 per cent, were O. R. A.; 38 were O. R. P.; 11 were O. L. P. In the full 1,000 cases there were 37 breech presentations, or nearly 4 per cent. Most of these were in the S. L. A. position. In the same number of cases there were 3 shoulder and 8 footling and 2 face presentations.

As to anesthesia, a record was kept of 700 cases. The only anesthetic employed was chloroform, which was used in 345 cases. Mostly it was pushed to a perfectly unconscious birth. It has been used carefully but freely, and without the least hesitation. Had one primipara with organic valvular heart trouble. She was kept completely anesthetized for three hours with chloroform, terminating with an unconscious birth, and all this without the slightest bad result. There seems to be no doubt but that chloroform weakens the force of the pains somewhat and also lessens their frequency in a degree. Of course, when the labor is weak and ineffectual, as well as almost always during the first stage, it must be withheld. The charge that it predisposes to postpartum hemorrhage my experience would prove groundless. I regard a hemorrhage occurring with the use of chloroform as simply a coincidence.

In 1,000 cases forceps was applied in 105, or a little more than 10 per cent.

Accurate observation was taken by ocular inspection of 700 cases with reference to perineal lacerations; 155 lacerations occurred, or about 22 per cent. This, in comparison with maternity hospital statistics, and also taking into consideration that about one-third of all the cases were primiparous women, is regarded as a good showing.

It is a common opinion among the laity that most births occur in the night-time. I have seen somewhere published a table of statistics which were compiled to refute this idea. Being a little curious on this point, notes were taken in 735 cases with reference to the hour of birth, with the following result:

A.M.					P.M.				
Between 12 and	1 o'clock,	29			Between 12 and	1 o'clock,	26		
" 1 "	2 "	29			" 1 "	2 "	28		
" 2 "	3 "	43			" 2 "	3 "	33		
" 3 "	4 "	41			" 3 "	4 "	30		
" 4 "	5 "	41			" 4 "	5 "	27		
" 5 "	6 "	30			" 5 "	6 "	25		
" 6 "	7 "	33			" 6 "	7 "	27		
" 7 "	8 "	33			" 7 "	8 "	24		
" 8 "	9 "	21			" 8 "	9 "	21		
" 9 "	10 "	32			" 9 "	10 "	33		
" 10 "	11 "	33			" 10 "	11 "	36		
" 11 "	12 "	32			" 11 "	12 "	28		
Total A.M. births, 397					Total P.M. births, 338				

These totals do not differ greatly. Between 2 and 5 o'clock in the morning and 10 and 11 o'clock in the evening are the hours having the greatest number of births. As to the relative frequency of births in the other hours, there is not much difference. Between 8 and 9 in the forenoon and between 8 and 9 in the afternoon are the hours of fewest births. But it has been demonstrated that the average duration of labor is about thirteen hours, and as this period is almost certain to involve the night, either at its beginning or at its termination, it is probable that it is from this fact that the popular error arises that most births occur at night.

In 1,000 cases podalic version was performed 21 times. Ordinarily this procedure was considered preferable to applying the forceps above the brim. If it be done carefully, with perfectly sterilized hands, it throws nearly all the chances of favorable results just where they should be placed—namely, in favor of the mother as against the child; the chances in instrumental work being forceps traumatism to both mother and child. In podalic version the chances of injury to the child come from too strong traction on its limbs or spinal column, and from asphyxia in the delay incident to delivering the after-coming head.

In 1,000 cases there were 43 stillbirths—21 born at full term and 22 prematurely. It was formerly my custom to tie the cord in two places and cut between them. This left one ligature on the cord between its severed end and the body of the child. One very nearly fatal case of hemorrhage from the cord occurred from this practice, and since then it has been my custom to tie the cord stoutly with two ligatures and cut beyond

them, leaving no ligature whatever on the placental end. To let the placental end bleed as freely as it may, allows, in my opinion, an easier delivery of the afterbirth. It would seem a much better practice not to sever the child from the placenta until after the delivery of the latter. This method has been practised with many of the latter cases of this series, and it certainly has particular advantages for children born feeble. Any practitioner who adopts the routine of placing only one ligature on the cord, no matter how firmly and carefully he does it, will sooner or later be mortified by the occurrence of an umbilical hemorrhage which may prove serious. For ligature material nothing is better than the ordinary white cotton cord, such as is used by grocers to tie their packages, and it can nearly always be found in every house.

In 1,000 cases prolapsed funis occurred in 4 cases, all fatal to the child.

Genuine hour-glass contraction occurred 7 times. These were all attended with great hemorrhage and required manual dilatation in every case to overcome them and deliver the placenta. There occurred two well-marked cases of antepartum hour-glass contraction, or rigid contraction of the "ring of Bandl" or the "contraction ring" of Schröder. Both these cases happened in primiparæ, and neither case seemed to be in the least degree affected or relaxed by continued profound anesthesia. Manual dilatation was successful in one of them to the extent of allowing me to reach past the contraction, seize a foot, and deliver by podalic version. In the other case, although the forceps could be applied with difficulty through the ring, it was impossible to force a dilatation and deliver. After a delay of two days a cephalotripsy was performed and the child delivered. This was done only after repeated attempts to reach a foot for version had failed.

Performed Cesarean section post mortem in 1 case. The patient died suddenly before my arrival, while in labor. She was chatting with her nurse, and turned on her left side, remarking she believed she could rest better in that position, gasped, and died instantly. About forty minutes elapsed before my arrival and the sanction of all parties to the operation could be secured. It was impossible to resuscitate the child. No postmortem was allowed.

Antepartum eclampsia occurred in 2 cases in the 1,000 labors. One of these mothers died subsequently under the care of

another physician, who was called to supersede me, after the birth of the child. The child lived. In the second case the mother did well, but the child was born dead. Norwood's tincture of *veratrum viride* is almost specific in this trouble, but it must be given freely and, at first, hypodermatically.

Performed a double episiotomy in 1 case to relieve a distended perineum. This is an operation too much neglected in obstetric practice.

The 1,000 labors had 7 cases of placenta previa. In the first a vaginal tampon controlled the hemorrhage until uterine contractions cleared the womb of its contents. Child dead. In the second, labor was induced at eight months, as the hemorrhages were alarming. Delivered the patient, who died in five days from septicemia. All the remaining cases were treated energetically as soon as the diagnosis was established. Under profound anesthesia the womb was forcibly dilated by the sterilized hand, the child seized by the foot and delivered. Hot antiseptic uterine douching and free stimulation. They all did well.

Had 5 maternal deaths in the 1,000 labors; 2 of these were clearly due to septicemia, 2 were due to traumatic peritonitis, and 1 to embolism. This is a mortality of one-half of 1 per cent. No maternal death has occurred during the last 518 labors.

Performed cephalotripsy twice in the 1,000 labors. It was done once in the case of antepartum hour-glass contraction before mentioned, and the other was rendered necessary to deliver a hydrocephalic head.

One child in the 1,000 was born hare-lipped. Repaired the deformity with good result when it was about 18 months old.

Two were born clubfooted. One of these died of intestinal trouble while being treated for the deformity; the other was gradually cured by appropriate bandaging.

Postpartum hemorrhage has never been troublesome to an alarming degree. Have never seen a case which could not be controlled by external kneading of the womb, or by internal irritation with the hand, or by ergot hypodermatically, or by all three of these measures.

In one case, as the child was being born, it was noticed that the neck was completely covered in by the turns of the cord. I carefully unwound six turns, after calling the nurse to witness the anomaly. This occurred in a case of acute hydramnios.

In two cases there was a firm knot in the cord. One of these children was of very feeble vitality and survived only forty-eight hours. The other was healthy.

The youngest primipara delivered was 14 years of age and the oldest was 42.

The smallest viable child at birth in this list of labors was three pounds and the largest was thirteen pounds.

As a relaxant for rigid os in the presence of ineffectual and almost unbearable pains, I consider nothing else quite equal to morphia, in a dose of one-half to three-quarters of a grain, given hypodermatically.

One of these cases was a confirmed epileptic. She passed through gestation and parturition without any apparent effect either way upon her malady.

Several of these labors have been entirely bloodless in the first and second stages, not a stain of blood appearing until the cord was severed.

The greatest number of times I have confined the same woman is six. In two cases in the 1,000 labors a well-marked puerperal mania supervened. It was nearly a year before one of these ladies recovered full use of her mental faculties.

One woman was delivered at full term of a mummified fetus, it having died at about the fourth month of development. The only cause she could assign for this condition was that she had been wearing a quite powerful electric belt.

In the 1,000 cases there were 14 twin labors. To illustrate how peculiarly obstetrical experience will run at times, it may be remarked that I had practised medicine fourteen years before I met a case of twin labor, while on one occasion since then two cases of twin labor occurred between morning and noon of the same day.

Delivered one woman in ten months and twenty-one days from the date of her last confinement. Four births in the 1,000 were illegitimate.

The ability to determine the sex of the child antepartum by the rate of the fetal heart beat I have made the subject of careful investigation and am convinced there is nothing reliable in it. In all cases, since there is only one chance to guess wrong, it seems that a correct prediction of sex has been nothing more than a mere coincidence. The so-called Chinese method seems to be quite reliable. Ascertain the number of the month upon which the woman became pregnant and compare this with the number representing her age. If both numbers are odd or

both are even, the sex will be male; if one number is odd and the other even, it will be female. Thus, if a woman is to be confined in October she became pregnant in January. January is the first month. If she be 24 years old at the time of her confinement we should expect a female; if 25 years of age we should expect a male.

These statistics are submitted with pleasure in the hope that they may contain something of interest to students of this branch of medical practice.

PESSARIES IN THE TREATMENT OF RETROVERSION OF THE UTERUS.¹

BY

WILLIAM MERCER SPRIGG, M.D.,

Washington, D. C.

WHILE realizing that this subject has been freely written about and discussed, and new methods and expedients are being devised for its relief and cure, yet there is much good to be had from the treatment of retroversion, in carefully selected cases, by the proper use of pessaries. The earliest report that I find of pessaries used for uterine support is in a paper by Levret, of Paris, 1770. In his article he describes an "egg-shaped" pessary and discusses at some length the method of introduction. At this early date the needs of a suitable pessary were appreciated—viz.: 1. It should be non-corrosive and non-irritating. 2. Light in weight. 3. It should be placed so as to hold the uterus in position. He describes at length the various materials of which pessaries could be made. Almost all materials that can be carved, moulded, rolled, or twisted into shape have at some time been used as a uterine support. Pessaries have been allowed to remain in the vagina for years (twenty-five years being the longest time I found reported), causing most distressing symptoms and sometimes requiring surgical procedure for their removal. Some gynecologists have gone so far as to condemn them utterly, and

¹ Read before the Washington Obstetrical and Gynecological Society, June 17, 1898.

unhesitatingly disclaim ever having had any experience in their introduction, but have "frequently removed them." The lack of experience is unfortunate, but, on the other hand, it is even more reprehensible to use them improperly.

During the years I have been in private practice many cases belonging to this class of disease have come under my observation. We have used such methods as seemed to me would be productive of the greatest relief to the case under treatment, and continued the use of those methods that gave the best results, always bearing in mind just what was expected to be accomplished in each individual case. While retroversion may be considered a disease, it is in many cases a symptom of some other underlying condition, as in deformities of the uterus, yet a symptom of such magnitude that it is the condition for which relief is sought. In considering this condition one is struck with the great variety of uteri encountered, from the small or the large, flabby uterus that will roll around in any direction to the uterus firmly embedded in a mass of inflammatory exudate fixed at the back part of the pelvis. In considering the range of pathological changes which may be met with, as well as the age, occupation, and social condition, it is evident that each case must be a study unto itself and treated according to the conditions presented. I shall confine myself to those cases in which the pessary may be used for the symptomatic and physiological cure, as well as anatomically if there has been no laceration of the soft parts either directly or of the submucous tissue; for it would be folly to believe that any case could be anatomically cured when there has been a laceration of the supporting structure, without surgical interference.

One of the most frequent causes of uncomplicated retroversion is subinvolution after labor or miscarriage. To this class may also be added those cases in which there is congenital deformity, or those resulting from falls or sudden strain, in which the ligaments supporting the uterus have been stretched and relaxed and the uterus heavy from defective or impaired circulation. In these cases, in which there has been no inflammatory exudate either into the uterine ligaments or pelvic peritoneum, it may be possible in a few minutes to place the organ in its normal anteverted position, giving the patient almost immediate relief. The uterus can now be held in position by a properly adjusted retroversion pessary.

The pessaries that have proved most satisfactory in my hands,

mentioned in the order of frequency in which I have used them, are: 1. T. A. Emmet's modified Hodge. 2. Albert Smith's pessary. 3. Thomas' retroversion pessary. The modified Hodge I now use almost exclusively. There have been a large number of other pessaries devised, but it would be a waste of your time for me to enter into their discussion, as most of them are worthless.

It is not every physician who possesses the mechanical ability to properly adjust a suitable pessary. It does not matter how much theoretical knowledge he may have, its correct adjustment can only be accomplished by practice and cultivation of the sense of touch, together with a knowledge of the anatomy and pathological conditions that may be found in the pelvis. There are many who labor under the delusion that a pessary is a very simple instrument to fit, while there are others who appreciate the difficulty. Fritsch, of Halle, has declared "that he considered it easier to perform a laparotomy than to apply a well-fitting pessary." Thus far hard rubber is undoubtedly the best material of which a pessary can be made. The soft pessary should never be used, as it not only does not accomplish the object for which it is used, but becomes rapidly foul.

Occasionally the Emmet's modification of Hodge's pessary does not have to be remodelled, but in the majority of cases this is necessary, and can be accomplished, after a little practice, by holding the part to be reshaped over a spirit lamp, after having first covered it well with oil or vaseline, care being taken not to burn the rubber. In a few minutes it becomes flexible and can be changed to any desired curve or angle.

The criterion by which you can judge if the pessary has accomplished its purpose is, first, it should maintain the uterus in its normal position without undue pressure, and, second, it should cause the patient no discomfort. The patient must be kept under observation, and the vagina examined at the expiration of one week, even if perfectly comfortable, or sooner if necessary; and if too much pressure is being exerted at any point, the instrument must be removed and corrected. No physician should allow a pessary to be worn if it causes pain.

As the success of the pessary is established the patient may increase the time between each consultation. After a period varying from four months to two years a cure may be expected,

especially if the displacement is of recent date. When the displacement is the result of subinvolution, all cervical lacerations, if they exist, must be repaired, or possibly the uterus may need curetting to facilitate involution.

A knowledge of the size of the pessary to be used is gained by careful measurement. The length of the instrument is determined by measuring from the posterior and lower aspect of the symphysis pubis to the top of the vaginal vault behind the cervix; the width, by sweeping the finger from one side of the cervix to the other, or by direct measurement; and the curves, by carefully noting the curves in the vaginal vault. I have found it necessary to alter the size and shape of the pessary as the uterus gets smaller from improved pelvic circulation. A large proportion of the cases present very different conditions from those just enumerated. The uterus, instead of being free and movable, is held backward by adhesions, the ligaments are infiltrated, and there is more or less tenderness.

The acute inflammatory condition must in all cases be first relieved by rest in bed, hot vaginal irrigation in the recumbent posture, together with the application of boroglyceride and ichthyol tampons, tincture of iodine, etc. After all acute inflammatory conditions have subsided, then the regular treatment for the retroversion should begin. Under bimanual manipulation even severe plastic adhesions will yield to treatment and allow the separation of the uterus from the posterior pelvic wall. This process of separation will take some time, varying from two or three to twelve months. It is, of course, understood that a careful diagnosis has been made and you are dealing with cases free from tubal and ovarian inflammation and interpelvic neoplasms. The material used for packing the vagina is of vital importance. Carded lamb's wool, which I have been using for the past ten years, has given eminent satisfaction. The wool retains its elasticity under all conditions. Absorbent cotton should never be used, as it becomes firm and non-elastic when it absorbs moisture. The application is best made through a Sims speculum, if the parts are sensitive, and later in the knee-chest position with the hips elevated to the highest point. The patient is directed to take this position always after using the hot vaginal douche, and the last thing at night before going to sleep. Frequently while in this position the patient is directed to introduce a vaginal tube for the

purpose of ballooning the vagina, thus not only making use of gravity but also atmospheric pressure as an aid in the treatment. The tampons may be applied every second or third or fourth day. The bowels should be kept thoroughly evacuated and every means utilized to increase pelvic circulation.

When the adhesions have been separated and the uterus can be brought into its normal position, then, and not until then, should a pessary be applied. It may not be possible at first to maintain the uterus in position, yet, by adjusting the pessary to the changed intrapelvic condition, your perseverance may be rewarded by accomplishing that object, with relief to your patient. Then, if pregnancy should take place, as it frequently does in women who have up to this time been sterile, great care should be exercised after delivery to see that involution is not interrupted and that the uterus is maintained in its normal position. It is possible to effect a cure in some of these cases and to dispense with the pessary.

We have not gone into the etiology of this condition, but it must be constantly borne in mind in treating each individual case.

The technique of this treatment and the use of the pessary have been fully and ably presented to the profession by T. A. Emmet, but my excuse for presenting the subject is the tendency of many toward immediate surgical interference, losing sight of the relief that may be attained by the plan indicated, and not wishing to take the time to follow out the slower method.

Even if a cure does not reward your efforts, your patient is, as a rule, in a far better condition for one of the more radical operations. It is a great temptation, in the class of cases considered, to tell your patient that by an operation she may be cured in a few weeks. There are many patients who will not submit to a ventrosuspension or ventrofixation or the Mackenrodt operation until the milder means have been exhausted.

1015 SIXTEENTH STREET, N. W.

TRANSACTIONS OF THE SECTION ON GYNECOLOGY OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, October 20, 1898.

EDWARD P. DAVIS, M.D., *Chairman, in the Chair.*

DR. J. M. BALDY read a report of

OVARIAN CYST PROTRUDING THROUGH THE INGUINAL CANAL,¹
also,

ABDOMINAL SECTION THREE MONTHS AFTER VAGINAL
SECTION.²

DR. C. P. NOBLE.—I had the pleasure of seeing the operation in the first case reported, therefore I have more interest in the report. I remember very well there were several gentlemen present, and Dr. Baldy, looking on the case as out of the ordinary, asked us what we thought about it. We had not had the advantage of making a vaginal examination. Aside from the peculiarity that the tumor was projecting into the inguinal canal, the most noteworthy point was the method adopted in its removal. After cutting directly down on the tumor and finding there was a considerable mass of it in the abdomen, Dr. Baldy very properly opened the abdomen in the middle line to deal with what was inside more satisfactorily, when it was found that it was a typical intraligamentous cyst. Instead of operating in the old way by enucleating the tumor, he did a hysterectomy, beginning on the sound side, cutting across the cervix and rolling the tumor out from below, finally clamping and cutting the infundibulo-pelvic ligament to the outside of the tumor. There is no doubt that this method of dealing with intraligamentous tumors is a great addition to abdominal surgery. In the case of young women who have not had children, I believe we can get along in most of them without doing hysterectomy, and we can use very much the same principles in dealing with the tumors; that is, the principle of the preliminary ligation of the arterial trunks, instead of enucleating the tumor and permitting oozing to take place during its enucleation and ligating bleeding points subsequently. In a young woman, when it is desirable to retain the uterus and the opposite ovary by ligating the ovarian artery on the side involved and then separating the anterior layer of the broad ligament near the uterus, we can get down to the uterine

¹ See original article, p. 827.

² See p. 825.

artery and tie it on the side involved before doing extensive enucleation. In this way I have been able to enucleate intraligamentous tumors with a minimum of hemorrhage. In a bad case, if the patient is feeble or the age is such that preserving the uterus or ovary is not of advantage, the method adopted by Dr. Baldy is the best way of dealing with these tumors. It is the best in preventing hemorrhage and best in the way of safety in reference to wounding the ureter. A careful man should certainly seldom wound the ureter in taking out one of these tumors after this method.

The other subject presented by Dr. Baldy is one which, of course, comes up to all of us. My position—the broad position—in reference to this subject is not exactly that of Dr. Baldy, although in many points we are in heartiest accord—namely, that as a general statement the best way to deal with pelvic inflammatory disease is by abdominal section rather than vaginal section. At the same time I would not take the position taken by Dr. Baldy, that vaginal operations should be condemned. I resort myself occasionally to the vaginal section, and I am satisfied that, used judiciously, in selected cases, it is a great addition to pelvic surgery, and I am quite sure that I save a certain number of lives which would be sacrificed if we did only abdominal surgery in dealing with these cases. There are one or two classes of cases which I have in mind. The one class of cases is where the patient has a large collection of pus, is acutely ill, has perhaps peritonitis and sepsis, where her general condition is such that she is not able to withstand a major operation. In these cases, by draining out these large abscesses, we can quickly, easily, and safely tide the patients over their critical condition and in a certain percentage of them cure the case. Of course the cases we cure are not cases of double pyosalpinx, but cases where there is one large abscess we can drain. I think the best field for vaginal section for pus collections in the pelvis is the pus collections which follow labor. Some time ago I summarized all the cases of this kind I had operated on and reported them to the College, fifteen in all. The results were all stated, and many of the cases were watched for a number of years. The great majority of these patients were permanently cured, had no subsequent trouble, and are now well. Of the number there have been eight children born and a number of others have miscarried, and as most of the women are young I have no doubt a great many other children will be born before these women reach the menopause. I am quite satisfied that vaginal section and drainage is not only a good operation, but a better operation to deal with these cases than is abdominal section. I am satisfied that the primary result in mortality is lower and ultimate results are better, in that not only are the women cured, but the sexual organs are retained. If we do abdominal section in these cases we are practically driven to do a radical exsective operation. The other class of cases in which I find it most desirable is the few cases of

suppurating hematocoele due to extrauterine pregnancy. I have operated on several with very good results. Another class of cases where I have used vaginal section to advantage is old gonorrheal cases where there has been a pelvic peritonitis set up in addition to old pus tubes, and where the patient's general condition was such that neither I nor any other surgeon would wish to do an abdominal section. I have been able to tide these patients over successfully, and some of them have remained persistently well. I have in mind one I saw the other day on whom I operated three or four years ago. She was a nurse; had pus tubes for some time. When I was called in to see her she had a temperature of 105° ; she had rigors, had an exudate almost up to her liver on the right side, and a very rapid pulse. In other words, her general condition was such that an abdominal operation would have been very serious, if not fatal. In that case I drained both pus tubes, and the patient has never been sick a day since. That, I confess, is a surprising result. I have had a number of cases of that kind where the result has been satisfactory. On the other hand, I have had to do a secondary operation in some of the cases. I believe double pus tubes due to gonorrhea will usually require secondary operation. I do not agree with Dr. Baldy that we have not gained anything in these cases. So far as leaving a fistula, I confess I have never seen one. Every one of them has healed. In those cases requiring a second operation the pus collection had been eliminated, and we had only to deal with ordinary diseased appendages, so that, instead of having to do a very bad operation, we had to do only a very simple operation. I believe the vaginal operation is a good operation in these selected cases. In general I do exactly as Dr. Baldy—that is, operate from above.

DR. E. P. DAVIS.—Some years ago a student in the outpatient maternity service at the Jefferson College reported to me the case of a woman, who he supposed was in a pregnant condition, who had been taken with sudden, sharp pain in the right groin, the lower abdominal region, after lifting a scuttle of coal. I told him to send the patient at once to the Philadelphia Hospital to my service. On examination the symptoms were those of a possible ruptured ectopic gestation or a hernia. The latter was the more probable supposition; there was a tumor in the inguinal region, to which impulse was given on coughing or respiration. There was a considerable tumor in the lower abdominal quadrant of the left side, so that appendicitis was considered in the diagnosis. It seemed that section should be made, and after consultation it was thought that it was a case of hernia, that a knuckle of bowel had slipped into the canal of Nuck. I began a very careful dissection in the inguinal region and failed to recognize any characteristics of hernia, and opened the abdomen. It was seen that a retroperitoneal condition of disease existed, which was causing an exudate down behind the peritoneum into the inguinal region. As the pelvis was entirely free, the abdomen was closed, the

tumor in the inguinal region was opened, and pus escaped. It was drained and the temperature remained febrile for some days. We had in that case, I think, retroperitoneal tuberculosis which simulated very closely hernia or ruptured ectopic gestation. The occurrence of the pain shortly after lifting a weight looked as though rupture of some adhesion had taken place at a point of least resistance in the inguinal region.

As regards the remarks of Dr. Baldy and Dr. Noble concerning vaginal operation: In puerperal cases I have had the best success by combining abdominal and vaginal drainage. I recall a case last spring where the patient had gone through a long septic siege. I was then called in consultation with Prof. Keen. We eliminated the necessity for operation on the appendix. It was decided to treat the case as a purely puerperal case. I followed the method of cleansing the vagina, opening the abdomen, then rapidly as possible breaking up any adhesions to the ovary and tubes in the surrounding tissue, freeing the womb as far as possible, opening the vagina and placing gauze two-thirds of the way in posterior surface of uterus, thereby holding uterus in position; the abdomen was closed without drainage and the patient was allowed to drain through the pelvis. The pelvis was filled, just as the gauze was put in, with normal saline solution. No effort was made to wash it out and it was allowed to drain out. This gauze was removed in thirty six hours without an anesthetic and the patient made a good recovery. This method of treatment—namely, abdominal incision for inspection, breaking up adhesions, bringing up the womb as high as possible for drainage—commends itself, I think. I should certainly consider vaginal operation alone but an incomplete procedure, even after drainage.

DR. NOBLE.—What do you do when there is pus?

DR. DAVIS.—I do the same thing; have done it on one or two occasions.

DR. FARIES.—In regard to pus cases, I would say it is not possible for any man to diagnose as to whether there is one or a number of abscesses. In the first place, if he drain below there will probably be a remission of the symptoms. the temperature will fall, the patient will react and will get better, and if there is one abscess she will probably be cured. If the temperature goes up thereafter, it is an indication that there must be another pus sac somewhere. If it has not been diagnosticated through the vagina, the abdominal section is the next thing to do. Of course there might be a general septic infection, but in speaking of these general conditions I think through-and-through drainage would also come into play. In regard to enucleation in these acute cases, I do not think there are any statistics which would give you an average mortality of less than 95 per cent. Dr. Noble has contributed his 20 cases. Kelly quotes 27 from Henrotin, all cured by drainage, and 65 of his own cases; 30 were cured by simple vaginal drainage, and 28 with through-and-through drainage by means of gauze. Five of these cases had to be operated on

the second time. Out of 65 cases he saved 62. Henrotin saved all of his cases; Dr. Noble all of his by drainage. These figures seem to indicate that there is no possible argument for taking out organs in this class of cases. The first thing to be done is to drain through the vagina; then, if there seems to be any secondary infection, to do a laparotomy and through-and-through drainage and give them a chance that way; the other way they are sure to die. My remarks are not in keeping with Dr. Baldy's paper, but have been elicited by Dr. Noble's discussion.

DR. J. M. BALDY.—It seems to me we have got always to bear in mind, and very distinctly, the very great line of difference between the two classes of cases, the acute puerperal cases and chronic cases, with which my paper dealt. They cannot be spoken of in the same category; they do not require the same treatment. As to Dr. Noble's statement in regard to acute puerperal cases, the arguments in these cases in no wise come into consideration when we are dealing with the chronic cases with acute attacks of inflammation on top of the old disease. They are essentially different diseases. It is not fair to mention one in the same breath as the other. Gynecologists should take the stand in discussions not to tolerate the mention of the one class with the other. Even in acute cases I think there is a large deal on paper which is nonsense, but which is true within certain limits, but absolutely misleading in others, and I think the cases Dr. Faries quotes are an illustration (Kelly's and Henrotin's cases). I do not believe there is a single case among Henrotin's cases that come into the category of the cases we are discussing. Henrotin directs opening the posterior cul-de-sac, breaking up adhesions. Henrotin's cases we see every day and they get well. Even among the acute cases there is room for subdivisions. As a matter of fact, when these cases are quoted they are misleading. I do not think one of Henrotin's cases was such a case as Dr. Noble refers to. When you come to a case that has gone on to suppuration, then the vaginal section is often the proper and conservative operation for a single abscess; but when you come to puerperal pus tubes and abscesses scattered among adhesions, you must understand your anatomy and pathology thoroughly to be able to distinguish between the two classes before operation: there the radical operation is the conservative operation and the removal of uterus and appendages necessary.

I believe with Dr. Davis the vaginal operation in these cases is a faulty operation; you do not know, when you are through, whether you have done it all. In those cases in which the omentum and mesentery are involved it is generally an impossible operation. Most of the modern vaginal men have gone back to abdominal section. These cases (such as I have reported) I hold from the vaginal point of view are impossible. I have seen most of the good operators in vaginal operation and I do not believe any of them could have done it safely. If they are simply going to tear it out regardless of consequences, all

right; but if they are going to avoid a fecal or bladder or ureteral fistula, that is another thing entirely. I stated the vaginal operation is often an incomplete one, even when done by an experienced operator; that one should hesitate before adopting this operation. There are so many reasons that are against the vaginal operation, except in acute pus cases, it is a doomed operation.

DR. JOHN B. DEEVER read a paper upon

PERITONITIS; CAUSE, TWISTED OVARIAN TUMOR PEDICLE.
REPORT OF FOUR CASES, ONE OF WHICH OCCURRED
AT SIX MONTHS OF PREGNANCY.¹

DR. H. D. BEYEA.—These cases of torsion of the pedicle of an ovarian cyst with the secondary development of peritonitis are of much interest to me. Last year I operated upon a woman who had a large dermoid cyst of the left ovary. There were four and a half twists in the pedicle, the cyst wall was infiltrated with blood, and there was present a distinct peritonitis. In addition she was six months pregnant. After operation she quickly convalesced and got well. At this time I looked up the literature on the subject and found that the German observers speak of the inflammation of the peritoneum as *Fremdkörper-peritonitis*; that the inflammation is due to the presence of a foreign body, or that in such cases of acute torsion of the pedicle a chemical irritation results from the degenerative changes which take place in the tumor. They record that nearly all of the cases get well. This is interesting, because there is no doubt but that the peritonitis here is not caused by the infection of pyogenic organisms. Hartmann and Morax were unable to find bacteria in two such cases. The only way bacteria may infect the cyst and peritoneal cavity under such circumstances is by the cyst becoming adherent to some hollow viscus, usually the Fallopian tube, intestine, or bladder. The fact that the inflammation of the peritoneum is due to the presence of a foreign body, which causes irritation through tissue change or by chemical products of this tissue change, explains why most of the cases get well after operation. If the peritonitis were septic in origin, due to the presence of pathogenic bacteria, most of the cases would die.

About the causes of torsion of the pedicle nothing is as yet definitely known. A theory that is new to me is advanced by Mickwitz—that torsion may result from the contraction of the transverse abdominal muscles. In those cysts which still occupy the pelvic cavity torsion is thought to be caused by the action of the bladder and large intestine.

DR. JOHN C. DA COSTA.—I have seen several ovarian cysts with twisted pedicles, and my experience has been that where there is any delay, or when the twisting has occurred three or four days before, there is, as a rule, peritonitis. I do not

¹ See original article, p. 832.

remember any bad cases in which the temperature was less than 104° . In all of them there was peritonitis, and there were in most a great many recently formed adhesions, possibly from the peritonitis. As to the cause of these twists, I do not know, but every one that I remember has given a history of some sudden jar, or lifting, or something of that kind. Let me cite two, one of which was a woman who had been perfectly well until a few days before, when on lifting she felt sudden pain. The temperature went up and the pain continued. She had a temperature of 104° when she came into the hospital. I removed the cyst, which was quite a large one—about ten inches long. That pedicle had about four and a half full twists in it; one motion of the abdominal muscles would not have put four twists in it. One had seven complete twists of the pedicle; one motion of the muscles would not have produced them. I would like some explanation from some of the members where the great number of twists came from. Each of these ovarian cysts showed gangrene in one or more places; sometimes gangrene of intestine where the cyst had rested against it.

DR. C. P. NOBLE.—My experience with ovarian tumors having twisted pedicle has been happy in that all I have operated upon have recovered. These cases look much worse than they are. I think we use the term gangrene in a rather loose way as applied to these tumors that look black. Usually they are really not gangrenous, but merely congested from obstruction of the veins. I agree with Dr. Beyea in thinking that in acute peritonitis due to this accident the prognosis is better than usual, because the peritonitis is not caused by pathogenic bacteria. One of the most recent cases of twisted pedicle was interesting in a collateral way. The patient came to see me in the spring of 1897, about the time I was going away. She had a procidentia and a small mass to the left of the uterus. I was in doubt whether it was a large ovary or a small tumor. In the fall there was no question as to whether it was a tumor, because it had enlarged to the size of an orange. Operation was not done on that patient for some little time, and, while getting her house fixed up, in hanging up some curtains she twisted the pedicle of the tumor and had to be operated on for peritonitis. Her pulse never got below 120, and is still that, over a year after the operation. As she still had the procidentia after she recovered from her operation, it was necessary to operate on her again, and I had some question as to the exact nature of this rapid pulse. It seemed to me to be a neurotic condition of the heart. Before operating on her a second time I thought the opinion of a medical man would be of interest, and referred her to Dr. Da-land, who told me it was a case of exophthalmic goitre. In other words, the torsion of the pedicle of the tumor had caused the exophthalmic goitre. He also wrote me that if we operated on her a second time it might cure her by reversing the process. I operated on her for procidentia, doing a plastic operation and suspension, but the pulse rate is still 120.

DR. J. M. BALDY.—These theories coming out of Germany

are all interesting, but, like a good deal else that comes out of Germany, there is a good deal of nonsense about them. A large amount coming from these sources is accepted as gospel. What nonsense to talk about the movement of the muscles being the cause of these twisted pedicles! Why is it not reasonable to suppose that there is some other cause at the bottom of the whole business? We have had probably twenty different theories about twisted pedicles from Germany. The theories are not based on common sense, and this theory is not based on any greater common sense than the others. I believe large numbers of these pedicles are twisted from the incipency of their growth. As a matter of fact, we have removed lots of these twisted pedicles which never gave a bad symptom. I have very little more respect for the theory in regard to the peritonitis. In the first place, there are no bacteria in the bladder which are pathogenic. We talk about the bacteria coming from the hollow viscera. We must distinguish between them. Take the bladder. It is not a septic, dirty organ as the bowel. You may have ovary adherent to bowel, and you may have germs travel through. If you do not have a pathological condition of the bowel, I do not see why any germs should travel through. You say these cases get well after operation, therefore they are not gangrenous. How do you know these cases are not gangrenous? Did these gentlemen upset the cyst contents in the abdominal cavity? No? Then we have no proof that the contained fluid is not septic. Simply because a cyst is removed safely means nothing, because there are other gangrenous sacs in the abdomen at times and the patients get well. We remove gangrenous pus sacs daily, and when we spill the pus in the peritoneal cavity a certain number of these cases die of peritonitis. Until the cyst contents are tested the theory is an incomplete one and not based on thorough investigation, and therefore does not stand the test of common sense. Why should we believe it just because Germany says so? There are too many weak points in the theories advanced that we are asked to accept.

DR. H. D. BEYEA.—I did not speak of infection taking place by the cyst being simply in contact with a hollow viscus. There must be adhesions between the cyst wall and intestinal wall, or the wall of a pyosalpinx, to allow pathogenic organisms to infect a cyst. The same also may occur when adhesions exist between the bladder and a cyst wall. The irritation of the bladder caused by the presence of the adhesions may go on to the production of a cystitis with decomposition of the urine. The urine, under such circumstances, may contain bacteria which can infect a cyst; or, again, the cystitis may antedate the adhesion to the cyst wall.

DR. BALDY.—Where do your bacteria come from? What inflammatory changes do you refer to?

DR. H. D. BEYEA.—Probably through the urethra. When the pedicle of an ovarian cyst is twisted so that symptoms of acute torsion and peritonitis are present, there has taken place in the wall of the cyst a condition of venous stasis. When

this occurs and continues long enough, one of two things happens—the cyst wall either undergoes fatty degeneration and a process of absorption, or the cyst undergoes necrosis. In the process of necrosis it is probable a toxin is formed, which acts as a chemical irritant to the peritoneum, or the presence of the necrotic foreign body in the peritoneal cavity alone produces the peritonitis.

DR. BALDY.—May I ask for an explanation of the action of the toxin?

DR. BEYEA.—Like many other things in medicine, it cannot as yet be explained.

DR. JOHN C. DA COSTA.—What is Dr. Noble's understanding of gangrene? There were spots of gangrene on the cysts with twisted pedicles, where they had been in contact with some other part of the abdomen—the intestine, for instance—or where there had been pressure. My idea was that the trouble came when the circulation was cut off in these cysts. It was very much as Dr. Beyea expressed it, that there was first venous stasis and then necrosis. My idea of gangrene is that it is something rotten. That is just what the spots on these cysts were. As to results, I do not remember that any of the patients died. After the operation the temperature went down and they made rapid recoveries.

DR. JOHN B. DEEVER.—My object in presenting this subject has been more for the purpose of laying stress upon the diagnosis than upon the treatment.

We will all agree that it is easy enough to recognize the presence of an ovarian tumor in the majority of cases. On the other hand, to recognize this variety of tumor in the presence of a diffuse peritonitis with rigid and tender abdominal walls, etc., is not always so simple. So far as the cause of gangrene of the sac is concerned, with Dr. Baldy I agree it is mechanical. The theory that Dr. Beyea has offered is interesting, but, personally, I do not give this question much thought. When called to see a patient suffering from peritonitis I aim to relieve my patient as soon as possible, and do not delay with the hope of making a bacterial investigation. We well know that gangrene presents two varieties, the moist and the senile; the former due to venous obstruction, the latter to arterial. In the cases of twisted ovarian pedicle coming under my notice the gangrene of the sac has been of the moist variety.

As to the question of drainage, I am always governed by the dictates of my judgment, and not by bacteriological examination of the fluid. Further, the small mortality in this class of cases I believe to be due to the fact that patients are operated on early.

DR. JOHN B. SHOBER read a paper upon

ECTOPIC GESTATION ASSOCIATED WITH PRIMARY
TUBERCULOSIS OF THE FALLOPIAN TUBE.¹

DR. H. D. BEYEA.—This case is very interesting to me, be-

¹ See original article, p. 836.

cause in tuberculosis of the tube a blood clot may be discharged from the Fallopian extremity of the tube, or a tubal abortion may occur. Of course it is possible this case is one of extra-uterine pregnancy. I have, however, twice seen hematosalpinx in a tube the seat of tuberculosis. The necrosis produced by the tubercular process had started a hemorrhage, evidently just as it does in the lungs, and the blood collected in and filled the tube. I mean to say that the hemorrhage here might easily be explained by the presence of tuberculosis of the tube.

DR. E. P. DAVIS.—In the cases you refer to were there other symptoms of pregnancy?

DR. H. D. BEYEA.—I think not. They were both long-standing cases of fibroid tuberculosis, and the Fallopian and uterine ends of the tube were closed and the lumen of the isthmus was filled with a large blood clot. The hematosalpinx was unilateral in both cases.

DR. JOHN B. SHOBER.—In reply to Dr. Beyea's remarks I will say that this blood clot was contained in a more or less organized sac wall; and it was not situated within the tube, but immediately upon the outside of the abdominal ostium, which was so contracted that it would hardly permit the passage of a fine probe. It was lying upon the ovary, grasped, as it were, by the ostium.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of May 20, 1898.

The President, THOMAS C. SMITH, M.D., in the Chair.

DR. JOHN VAN RENSSELAER read the paper of the evening, entitled

REMOVAL OF TUMOR OF UTERUS FROM SUBJECT PAST NINETY YEARS OF AGE.

I wish to report this case for the reason that its history is unusual and it was one of much interest to me. Mrs. B. is in her ninety-second year. She has always enjoyed exceedingly good health, and from her present appearance one might imagine she would readily round out her century of years. Between the ages of 20 and 30 she gave birth to four children; at 45 she had passed the change of life and for the subsequent forty-five years was unconscious of any uterine function. Moreover, she was most practical, with no knowledge of nerves.

In September last, upon straining at stool, a small quantity of blood was passed which was supposed to come from the rectum;

a few days later, while urinating, more made its appearance, to be followed finally by a profuse hemorrhage of bright red blood. There had never been any previous discharge from the uterus for nearly fifty years, no pain or discomfort in this region—in short, nothing had transpired to indicate that the organ had not atrophied and its cavity practically disappeared, as was to be expected.

Great reluctance to undergoing pelvic examination was manifested. The cervix was found widely dilated, with a mass protruding, upon which I made traction and removed piece-meal a foul-smelling, broken-down submucous fibroid as large as one's two fists. The depth of the uterus was five inches. Gentle curettement followed by intrauterine douche was done and patient put back to bed. No anesthetic had been necessary. The next morning, fearing infection from the degenerating growth, I gave a second intrauterine douche. From this time on there was no discharge of any kind and no rise of temperature or increase of pulse rate. After a lapse of two months blood again made its appearance, accompanied by profuse watery discharge and sudden attacks of pain of an uncommon nature in that it would begin promptly at 11 o'clock and last till the clock struck 5 when it would as surely disappear. No reason could be found for this, as the patient would be lying quietly in bed; it was certainly not dependent upon ingestion of food nor was it hysteria.

Examination again found cervix dilated and mass protruding, but efforts to extract it caused so much pain that I was obliged to desist. Consent to administer anesthesia could not be secured. From that time to the present, four months, occasional pieces of the tumor slough away; for days at a time there will be no discharge and no pain. Patient's general condition is good, with exception of loss of the good appetite she formerly possessed. The abdomen is soft, with much fat in its walls, through which the uterus can be felt about as large as an orange. This case I have taken to be one of submucous fibroids with either very slow development as years passed on, or, more unusual still, as forming in the uterus at this advanced age. We know that fibroids, even of considerable size, may exist for a long time without causing any sign of their presence beyond enlargement of the girth, which may be attributed to stoutness, but sooner or later they do manifest themselves, either by pressure symptoms, or in the submucous variety by hemorrhage.

In the present instance the interesting points to me have been the appearance of the growths at this advanced age; the degeneration of the masses without constitutional infection; and the regular occurrence of pain, disappearing upon the stroke of the clock.

I neglected to say that the mental vigor of the patient is unimpaired and her statements to be implicitly relied upon as facts.

Realizing the tendency of fibroid tumors to undergo malignant degeneration, I have fancied this might be the case here,

but microscopical examination shows such not to be the fact. In the absence of permission to resort to operative measures, I have used general tonic remedies to keep up the strength, regulation of the emunctories, and small doses of ergot to control hemorrhage and perhaps produce expulsion of the mass. As I have said before, she looks as if she might live ten years more, unless some sharp and severe hemorrhage intervenes some day, weakening her beyond the hope of recovery.

DR. JOSEPH TABER JOHNSON said his experience in operations upon old people was quite as favorable as in the young. He had operated on about a dozen women who were over 65 years old, and in a paper that he had written had collected fifty cases reported of women over that age operated upon for ovarian tumors, with a recovery of ninety-five per cent. In simple uncomplicated ovarian tumor operations all should get well. The old idea that fibroid tumors do not grow or give trouble after the menopause is not borne out by the facts. The successful removal of a fibroid tumor from a woman so old as in the case reported was quite remarkable.

DR. W. S. BOWEN said, as to anesthesia in these cases of old people, it was a point to determine what anesthetic to use. While an assistant at the University of Maryland Hospital he gave chloroform to old people frequently in Dr. Chisolm's clinic, and gave it without accident or fear. They required little of the anesthetic, and there were few symptoms. At the Emergency Hospital in this city he had given chloroform successfully to old people.

DR. T. C. SMITH said he saw a case some years ago with several other physicians, a woman over 60 years old who had a small, dense fibroid in the lower section of the uterus which it was difficult to get at. Several attempts were made to remove the tumor, and two écraseurs were broken in the effort. It was removed the next day, but the woman lived only two days after the operation.

DR. H. L. E. JOHNSON said he had never seen a tumor of the uterus in a patient as old as the case reported. Dr. Van Rensselaer had been fortunate in that no infection had occurred. He had operated several times on women who were over 60 years old. One class of cases, as the polypoid, gave much trouble from hemorrhage, while others did not.

DR. E. L. TOMPKINS inquired of the essayist as to how much ergot was given. He said that small doses encouraged rather than diminished hemorrhage.

DR. MILLER (a visitor) said he had no experience with fibroid tumors in the aged. He had recently seen a number of cases of fibroid tumors at Guy's Hospital, London. Very opposite views were held by the surgeons there. One removed the appendages in order to establish the menopause that the fibroid might shrink, while his colleague removed the fibroids, leaving the adnexa.

DR. G. N. ACKER said if tumors gave trouble they should be removed from the aged as well as the young. He had a

case in a woman 74 years of age on whom Dr. Joseph Taber Johnson had operated successfully several years ago, and she was now in good health.

DR. J. T. WINTER said he not long since had a patient, a woman 54 years of age, who was having hemorrhage from the uterus. An examination revealed an offensive, bleeding mass, which he at once removed, controlling the hemorrhage. As to the use of ergot, he had had a case in a bride who he thought was having a miscarriage. On examination he discovered a piece as large as an orange protruding from the uterus. Ergot was given, so as to cause the expulsion of the polypus, but on returning the next morning the polyp had been drawn back into the uterus and that organ had closed. About a year later she had a miscarriage, when the polyp was expelled.

DR. JOHN VAN RENSSELAER said, in reply to Dr. Tompkins, that he had given thirty drops of the fluid extract three times a day, but he did not consider ergot good to give to old people. The tumor was decomposed, but the patient showed no sign of infection. There was not the slightest rise of temperature. It was not yet decided what anesthetic was the best to use. It was his impression that ether was best in old people.

Meeting of June 17, 1898.

The President, THOMAS C. SMITH, M.D., in the Chair.

DR. J. WESLEY BOVÉE presented a specimen of

OVARIAN PAPILLOMATO-FIBRO-ADENO-CYSTOMA

that developed in the broad ligament. The history of the case was briefly as follows: Mrs. L., colored, had been attended by Dr. Heiberger for two years for a mass in the right half of the pelvis, and operation had been advised, but, owing to the objection of her only son, refused. Early in May of this year she was seen by Dr. Purvis, who advised her to go to Columbia Hospital to my service. I found her a woman 58 years of age and very feeble; the abdomen was very markedly distended by a cystic growth, and from the history of its beginning on one side, and other points about it, the diagnosis of malignant ovarian cyst was made, and May 19, 1898, an abdominal operation was done. From the cyst, which was found to be in the right broad ligament, the very long Fallopian tube spread to the uterus, which was slightly enlarged and the seat of a few small fibroids; its removal was attempted by severing the attachments of the left appendage and uterus, and then the right from below upward, clamping as the arteries came into view. The cyst was still in the ligament, and its rupture carefully avoided, though the abdominal incision had to be extended from the pubes to near the ensiform cartilage; the broad ligament covering it was slit across and the cyst easily peeled out. The uterine and ovarian vessels were now ligated, the cavity

well packed with sterilized gauze, some of the broad ligament trimmed away, and the opening in it stitched over. Two gallons of physiological salt solution were poured into the abdominal cavity, the wound closed, and through the vagina the broad ligament punctured and the end of the gauze brought into the vagina. She made a good recovery. The tumor was multilocular, and the larger cysts contained three gallons of dark-colored fluid. In the lower part of the lower side of the tumor, as it lay in the woman, was a hard, solid portion that resembled in appearance, size, shape, and color a pneumonic lobe of the lung. Dr. Carroll, pathologist to the hospital, reported it "cyst of the broad ligament; is a cystic, papillomatous fibro-adenoma, consisting of a fibrous stroma permeated by columns of glandular epithelium; the papillomatous masses are traversed by a few slender bands of muscle fibre." As no ovary could be found on that side, the microscopist's examination, together with the multilocular condition of the growth, as well as its slight attachment to the uterus at the site of the ovarian ligament, would leave no doubt as to the nature of the growth. Ovarian cystic tumors are not very common in the colored race, and, indeed, the few I have seen have been in light-colored women and have been malignant, and, further, have occurred late in life.

DR. W. M. SPRIGG read the paper of the evening, entitled

PESSARIES IN THE TREATMENT OF RETROVERSION
OF THE UTERUS.¹

DR. J. WESLEY BOVÉE opened the discussion by saying that he was not so enthusiastic on the subject of pessaries as the essayist. There is a difference of opinion as to the time to continue treatment by pessaries, etc., before operation should be done. He did not agree with Dr. Sprigg as to subinvolution being the principal cause of retroversion. Malformation which existed before the patient was married is the potent factor, as a too short anterior vaginal wall, relaxed utero-sacral ligaments allowing an anterior displacement of cervix and a consequent tilting back of the fundus. The round ligaments, also, being put on the stretch by an over-distended bladder, do not regain their integrity when this organ is emptied, or the broad ligaments at the sides may be relaxed. Malformation due to localized disease of the uterus is a frequent cause, also some localized peritonitis causing even a slight adhesion of the adnexa. You may replace the uterus and put in a pessary, but the pain will eventually come, and if the pessary is removed the uterus will drop back. In many cases the operation is not so terrific nor is it a capital one. He admitted that not every one can insert a pessary well; the smallest that can be well borne and give the necessary support is the one to be used. In some cases the pessary is sufficient, especially in those nervous women who are run down, where general hygienic treatment

¹ See original article, p. 862.

and tonics are combined. Dr. Bovée said he had very little faith in the Brandt method. Those who use this method do not see in the abdomen and never know the true condition. There is a small field for pessaries where there are no adhesions and no laceration of the perineum.

DR. H. L. E. JOHNSON said he believed the general use of pessaries to be bad practice. To do good they must be large and consequently cause more relaxation than already exists, and leave the patient worse off than if she had never worn the instrument. Anterior displacements are not to be considered, as treatment is not necessary; there is no fixed position of the uterus. Posterior displacements are brought about by a number of conditions extending over a number of years, just as complete hernia seldom develops suddenly. Constipation, lifting, wearing of improper corsets, favor displacement. It frequently becomes chronic after confinement when the uterus and all the pelvic organs are in a state of subinvolution. A heavy uterus and a stretching of the supports permit a descent, and afterward there is a turning, the organs become engorged, and adhesions take place. If pus is present and the adhesions broken up a septic condition results. No evil results follow breaking up of adhesions if there is no septic material present. Retroversion does not always produce symptoms, nor does it always follow that a uterus retroverted before pregnancy becomes so again after delivery. In many cases of retroversion pregnancy does not take place or there is a miscarriage.

DR. W. S. BOWEN told of a boy he had seen that day, 2 years old, whose life had been saved by a pessary. His mother had aborted five times, and was enabled to carry this pregnancy beyond the danger period by the use of a pessary which corrected a retroversion. She became pregnant again and promptly miscarried, the pessary not having been used, as she did not desire any more children. Dr. Bowen cited two other cases where women had been married and never pregnant owing to retroversion of the uterus. After insertion of Smith-Hodge pessaries both became pregnant and were delivered at term. He had seen a number of patients relieved of pain in the back by well-fitting pessaries.

DR. J. R. BROMWELL mentioned the case of a patient, 55 years of age, who had worn a pessary for eleven years; it had become embedded so that he had to dig it out. She had no discomfort until the discharge of blood came, after having passed the menopause for several years.

DR. I. S. STONE said, in looking at the subject from the standpoint of a general practitioner, the paper was a good one. We should consider that the general practitioner sees a great many cases in their incipiency. The majority of the cases that come to him have been treated by the general practitioner, and well treated. He knew of two cases that had been cured in the hands of a general practitioner. One case afterward relapsed. If there are slight adhesions the uterus will fall back as soon as the pessary is removed. In the Woman's Hospital of New

York a great many beds are given to patients being treated otherwise than by operative procedure. Pessaries should be used that do the least harm. If a patient can wear a pessary without being aware of it, the reflex disturbances will be relieved. Dr. Stone spoke of a case, that had once been under the care of Dr. Bromwell, who wore a Babcock pessary until a fistula had been made in the posterior part of the cervix. If good plastic work is done, pessaries like Babcock's will not be wanted.

DR. J. R. BROMWELL said that the pessary sometimes did harm by pushing the uterus up so high as to interfere with the circulation, causing a congestion, which is as much a pathological condition as if it were too low in the pelvis.

DR. W. M. SPRIGG closed by saying that his paper was on the proper use of pessaries, which Dr. Bovée had evidently misunderstood or he would not have made use of such strong statements. The field for pessaries is small and they should not be used generally, but there are cases where they are of infinite value. When the patient will not submit to an operation there is no substitute. If the patient is beyond the child-bearing period suspension or fixation is to be preferred. He has used pessaries with satisfactory results. He purposely did not refer to the causes of retroversion as spoken of by Dr. Bovée. When due to malformation, or there are adhesions present, a surgical operation is the proper procedure.

TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF LONDON.

Meeting of June 1, 1898.

The President, C. J. CULLINGWORTH, M.D., in the Chair.

Specimens.—MR. DORAN: Blood concretions in the ovary. MR. BLAND SUTTON: Ovary containing a calcified ball, probably a large calcified corpus fibrosum. MR. A. BURTON: A deformed fetus. DR. HORROCKS: Uterine fibroid undergoing cystic degeneration. DR. LEWERS: Primary sarcoma of the body of the uterus (deciduoma malignum), the patient remaining well sixteen months after hysterectomy. DR. A. ROUTH: (1) An ovarian dermoid removed by the vagina during pregnancy; (2) ruptured tubal gestation at three to five weeks. DR. W. DUNCAN: A five-months fetus born with placenta and membrane intact.

DR. HERBERT SPENCER read a paper on

TWO CASES OF FIBROMYOMA OF THE UTERUS REMOVED BY
OPERATION FROM WOMEN UNDER TWENTY-FIVE
YEARS OF AGE.

The diagnosis of the nature of the tumor was verified by examination with the microscope, and the age of the patients by obtaining their certificates of birth. In the first case (age 24) the tumor weighed 4 pounds 9 $\frac{1}{4}$ ounces and was removed by amputation after laparotomy, the pedicle being treated extraperitoneally. In the second case (age 23) the tumor with the uterus weighed 16 $\frac{1}{4}$ ounces and was removed by vaginal hysterectomy after the peritoneum had been opened in an attempt to enucleate the tumor. The patients were in good health two years and one year after operation. A brief abstract was given of 40 recorded cases of uterine fibroid tumors occurring in women under 25 years of age. In at least 11 of the cases the diagnosis was clinical, and in only 4 cases was the diagnosis verified by examination with the microscope. The author concluded that uterine fibromyoma is rare before the age of 25 and very rare before the age of 20, and that there is no satisfactory record of its occurrence before the age of puberty.

DR. BOXALL gave details of his case referred to by Dr. Spencer. The patient was born on August 9, 1870. She was, therefore, just 23 years of age when she came under observation in August, 1893. On account of pain and fever an operation was performed. Two fibroid nodules, not larger than a nutmeg, were visible on the abdominal surface of the uterus near the fundus. A mass in the left broad ligament was enucleated and removed with the uterus and appendages, the pedicle being secured by a clamp outside the abdomen. The mass proved to be composed of involuntary muscle growing from the left side of the uterus. Under the microscope it exhibited the ordinary characters of a fibromyoma.

DR. HERMAN, in reference to some remarks by Dr. William Duncan, said that his opinion as to the practicability of enucleation in the case of the tumor shown by Dr. Duncan at the November meeting of the Society remained the same as it was in November. He did not think Dr. Duncan had shown (as was stated in the Transactions) that the uterus might easily have been perforated had enucleation been attempted. He thought, on the contrary, that by morcellement the fibroid could easily and safely have been removed. Had Dr. Duncan's tumor been removed in this way the patient would have recovered capable of every function, instead of being minus her uterus. He did not think Dr. Spencer's case showed that any greater damage attended enucleation, for his patient recovered as well as she could have done after abdominal hysterectomy, and without the disadvantage of an abdominal scar. He (Dr. Herman) thought the preliminary dilatation was most safely done by tents.

DR. PETER HORROCKS did not think that the paper was intended to provoke a discussion on the relative merits of enucleation of fibroid tumors of the uterus and their treatment by hysterectomy. It had been said by Mr. Alban Doran that

these tumors never occurred, or were practically unknown, before the age of 25. It must be admitted that true fibroids—that is, fibromyomata—of the uterus were rare before 25 and unknown before puberty. They were also much commoner in single than in married women, and in women who had never been pregnant than in women who had. Moreover, the tumors began to atrophy, as a rule, after the climacteric. All these facts proved that in some way fibroids were associated with active menstrual life.

DR. LEWERS agreed with the remarks that had been made by Dr. Herman as to enucleation. He considered that the justifiability of enucleation per vaginam depended chiefly on the position of the fibroid in relation to the uterine wall. When the fibroid was so situated that its largest diameter projected free in the uterine cavity and only a moderate part of the tumor (one-third or less) still remained embedded in the thickness of the uterine wall, enucleation by morcellement per vaginam was free from any great risk and was the proper treatment for the case. When, however, examination showed that the largest diameter of the tumor was still in the thickness of the wall of the uterus, he regarded enucleation as exceedingly dangerous.

THE PRESIDENT said that in the course of a discussion upon a specimen of fibroids of the uterus in a girl of 26, shown for him (the President) by Dr. A. F. Stabb fifteen months ago, Mr. Doran had remarked that a monograph on the subject of fibroids in early life was much wanted. Such a monograph had now been produced. It was to be hoped that Fellows would henceforth recognize the importance of recording, on the lines Dr. Spencer had laid down as essential for scientific accuracy, all cases that came under their observation of uterine fibromyomata occurring in young subjects.

As regards enucleation per vaginam, he was bound to say that in his experience this method had proved more dangerous than removal of the entire uterus.

DR. SPENCER, in reply, said that the object of the paper was to show that fibromyoma of the uterus did occur in women under 25 years of age. Its rarity, judged by public records, was shown by the fact that Dr. Boxall's was, as far as he knew, the only other case fully and satisfactorily described by an English author. He had not discussed the treatment of these cases; but he might say that enucleation of submucous tumors per vaginam had given him very good results and was an extremely valuable operation.

Meeting of July 6, 1898.

The President, C. J. CULLINGWORTH, M.D., in the Chair.

Specimens.—DR. PEMBREY: Five cake-like bodies (containing fetuses) which were found free in the peritoneal cavity of

a large rabbit. DR. J. D. McCAW: A cystic fibromyoma of the uterus removed by laparotomy from the uterus in the middle of pregnancy; delivery at term. DR. WISE: Ovum with hemorrhage into the placenta. DR. TATE: Uterus removed by vaginal hysterectomy. DR. HERBERT SPENCER: Ovarian dermoid which, incarcerated in pelvis, was pushed up in the middle of pregnancy and removed after delivery at term.

THE SAGITTAL FONTANELLE—FRONTO-ANTERIOR POSITIONS
OF THE HEAD.

DR. ARNOLD LEA read a paper on the sagittal fontanelle in the heads of children at birth. The author stated that abnormal fontanelles had been known to be present in the head of the fetus at birth for many years. Several of these membranous spaces had been described (naso-frontal, cerebellar, medio-frontal, sagittal), of which the most interesting to obstetricians was the sagittal fontanelle, first described by Gerdy in 1837. The author's observations were based upon the examination of 500 consecutive cases at birth. The sagittal fontanelle was situated two centimetres in front of the posterior fontanelle, on a transverse line drawn between the two parietal eminences. Its average length was $1\frac{1}{2}$ centimetres and width 1 centimetre. It might form a space as large as the anterior fontanelle, or it might be developed on one side only. The edges of the membranous space were usually formed of well-developed bone, but at times there was deficient ossification of the posterior part of the parietal bone.

He had found the membranous space present in 4.4 per cent of his cases; he had not included those in which there was only a notch in the parietal bone. The fontanelle was bilateral in 17 cases and unilateral in 5 cases; in 4 instances it extended up to the parietal eminence on each side.

A description was given of the development of the parietal bones, and of the obstetric and medico-legal interest of the fontanelle and of its effect in facilitating moulding of the head.

DR. HERMAN said that two practical points arose out of the laborious and careful investigation of Dr. Lea. The first was that a sagittal fontanelle might mislead one who diagnosed the fetal position by feeling the sutures and fontanelles. But this would not trouble any one who was accustomed to diagnose the position by abdominal palpation. The second was that a sagittal fontanelle indicating backward ossification might invite a trial with forceps in a case which, with a very hard head, would call for perforation.

DR. HERBERT SPENCER expressed surprise that the fontanelle had been found in 4.4 per cent of cases. He asked Dr. Lea whether his observations were clinical or postmortem. He (Dr. Spencer) was well acquainted with fissures in the parietal bone, which were common, and every obstetrician knew how depressible the upper edge of the parietal bone often was. What was really only a fissure might, therefore, appear to the

examining finger as a space; but having carefully examined the skulls of over 300 new-born infants post mortem, he had not met with one instance of a sagittal fontanelle at all comparable to the anterior fontanelle. He had, however, met with a parietal fenestrum and with insular ossification and absence of ossification in the parietal bones of the mature fetus. He had no doubt that as a considerable anatomical space the sagittal fontanelle occurred with much greater rarity than that stated by the author.

THE PRESIDENT said it would no doubt have been quite as much a surprise to the Fellows generally as it had been to him to learn that a genuine sagittal fontanelle had been found in so large a proportion of cases. He thought the liability of this extra fontanelle to be mistaken for a fracture the result of violence, had an important medico-legal bearing.

DR. LEA, in reply, stated that the percentage of cases of parietal fontanelle observed by him was similar to that of M. Hemy. In children some months old, instances in which it remained open were not uncommon. He had examined two cases in which the infants died soon after delivery.

DR. GEORGE ROPER read a note on

SOME DIFFICULT CASES OF FRONTO-ANTERIOR POSITIONS OF THE FETAL HEAD.

The author stated that after an extensive experience in difficult labors he never felt satisfied with the knowledge he had of the difficulties connected with the fronto-anterior positions of the fetal head in labor. With a child beyond average size or with small or misshapen pelvis considerable difficulties occurred. He referred to the description of the labor in Dr. Herman's book on "Difficult Labor," and stated his opinion that the difficulty was due to the position of the child's trunk. He (Dr. Roper) recommended, after a moderate trial with forceps, podalic version in the treatment of these cases, and showed an instrument he had devised for facilitating traction on the leg.

DR. HERMAN thought that Dr. Roper had done service in calling attention to the fact that the mechanism of delivery did not depend only upon the relation of the head to the pelvis. The position of the trunk caused extension of the spine, which led to extension of the head. Also, as Dr. Roper had pointed out, the fetus would enter the pelvis more easily when its concave abdominal aspect was applied to the mother's lumbo-sacral convexity.

DR. PETER HORROCKS said that he agreed that the tendency in these cases was at first toward extension, but after further descent into the pelvis the head tended to be flexed by the uterine forces. The treatment depended upon the mobility of the fetus; when there was little or no mobility the proper treatment was not rotation nor version, but craniotomy.

REVIEWS.

DISEASES OF WOMEN: A Treatise on the Principles and Practice of Gynecology, for Students and Practitioners. By E. C. DUDLEY, A.M., M.D., Professor of Gynecology, Northwestern University Medical School; Gynecologist to St. Luke's Hospital, Chicago, etc. 637 pp., with 422 illustrations and 2 colored plates. Lea Brothers & Co., 1898.

The arrangement of this work is peculiar, it being divided on pathological lines into five parts: 1. General Principles; 2. Inflammations; 3. Tumors, Malformations, and Tubal Pregnancy; 4. Traumatisms; 5. Displacements and Pelvic Massage. Etiologically and chronologically or sequentially (if this word may be used) this arrangement may be logical and correct; but it is doubtful whether it will appeal to the student, who, we think, will prefer to find under the same heading all that is to be said about the diseases of one organ. Besides, inflammations of *all* the female genital organs do not necessarily co-exist at the same time, as a woman may have a salpingitis and no "metritis" (the author still clings to this antiquated term, for which he substitutes an imported word, "myometritis"), and vulvo-vaginitis may exist without either salpingitis or endometritis. And why tumors, malformations, and tubal pregnancy should be classed together is not apparent to the uninitiated reader. The author says in his preface that "Displacements result from Inflammation, Tumors, and Traumatisms, and are therefore placed after them." Granted. But how about congenital displacements, or those gradually produced by excessive intra-abdominal pressure resulting from constipation, tight lacing, corsets, and heavy skirts, or overfilling of the bladder, and other agencies which do not come under the above heads? This new arrangement may be original, but it seems neither correct nor practical, and it certainly lacks consistency. We fear that it will be difficult to improve on the old plan of regional classification of these diseases, which, in spite of its evident defects, still seems the most natural and useful.

The effort of the author to carry out his system of describing all diseases in the natural sequence of cause and effect (with which we would unhesitatingly agree if thereby the study and comprehension of the respective affections were facilitated) has induced him to distribute the consideration of dysmenorrhea, amenorrhea, menorrhagia, and sterility among the various sections where etiologically or symptomatically they belong. This is pathologically correct, but inconvenient for the student, who is referred by the author to the index for information as to the location and the description of these disorders.

Undue preponderance seems to be given to Massage, to

which a whole chapter, the fiftieth and last, is devoted. We doubt if the student and general practitioner, for whom the book claims to be written, will care or need to know, or is able to profit by, the detailed description of the manipulations comprised in the treatment of uterine displacements according to this method. It strikes us that the space devoted to this subject (twenty-one pages) might have been more usefully employed.

Aside from the above criticisms we have nothing but praise for the book. Especially commendable are the chapters on Antiseptics and Asepsis, on Minor and Major Operations, with the after-treatment—in short, the one hundred and forty pages devoted to General Principles; then the sections on Endometritis, Salpingitis, and Pelvic Peritonitis and Cellulitis; on Injuries to the Bladder; on Uterine and Ovarian Tumors, and Tubal Pregnancy. Excellent is the description of all operative measures, as might be expected from a man so familiar with all that pertains to modern surgical gynecology as is the author, whose extensive experience is nowhere better shown than in his discussion of operative technique and the consideration of the various post-operative accidents and complications which are inseparable from abdominal surgery.

The illustrations are, for the most part, excellent and original. The only two colored plates are an exception to the latter part of this statement, since they are the old well-known representations of the various forms of lacerated cervix first published by Mundé nearly twenty years ago, which have done duty in nearly all gynecological text books ever since, and therefore seem incapable of improvement. However, due credit is given to Mundé. We have greatly enjoyed reading this book, and willingly admit having learned something from it. It certainly is original in several respects, a quality to be commended and rather exceptional in recent text books on gynecology.

DISEASES OF WOMEN: A MANUAL OF GYNECOLOGY. Designed especially for the use of students and general practitioners. By FRANCIS H. DAVENPORT, M.D., Assistant Professor of Gynecology in the Medical Department of Harvard University, Boston. New (3d) revised and enlarged edition. In one 12mo volume of 387 pages, with 155 illustrations. Lea Brothers & Co.

The necessity for a third edition shows that this work has been appreciated. In the present volume certain surgical as well as non-surgical methods of treatment have been included, while the general plan of the book has not been changed; as before, pathology has been largely omitted, rare affections have not been included, and treatment has been restricted to measures that the author has found of practical value. The book fills its place well; it is not intended for the specialist, but gives the detailed teaching needed by the student and general practitioner, and gives it clearly.

A TREATISE ON THE SCIENCE AND PRACTICE OF MIDWIFERY.
By W. S. PLAYFAIR, M.D., LL.D., F.R.C.P., Emeritus Professor of Obstetric Medicine in King's College, London; Examiner in Midwifery to the Universities of Cambridge and London. Seventh American from the ninth English edition. In one octavo volume of 700 pages, with 207 engravings and 7 full-page plates. Lea Brothers & Co.

Almost every student and practitioner knows Playfair's "Midwifery." Twenty-two years have elapsed since the first edition was published, and its continued popularity has necessitated sixteen editions in England and America. These frequent editions have allowed the constant changes and advances necessary to keep up with the rapid evolution of its specialty. The present volume bears evidence of most thorough revision, and is in part rewritten. As an almost ideal book for the student it will, no doubt, maintain its long-held pre-eminence.

TWENTIETH CENTURY PRACTICE. An International Encyclopedia of Modern Medical Science by leading Authorities of Europe and America. Edited by THOMAS L. STEDMAN, M.D., New York City. In Twenty Volumes. Vol. XV. Pp. 658. New York: William Wood & Co., 1898.

This volume continues the consideration of the Infectious Diseases, treating in turn Influenza, Typhus, Plague, Glanders, Anthrax, Foot and Mouth Disease, Actinomycosis, Rabies, and Pyemia and Septicemia.

All of these subjects are handled in a satisfactory manner, except that the last does not seem to quite reach the high standard set for the work.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Tetanus Puerperalis.—Kuehnau ⁴⁷ has investigated the literature pertaining to this subject, and also reports a case from the University Clinic in Breslau, the history of which is briefly as follows: A multipara passed through a perfectly normal confinement, in which no vaginal examinations were made. The puerperium proceeded also without any disturbances, and the patient left her bed for the first time on the sixth day post partum. She stated, however, that on the day she took a vaginal douche, two days later, there appeared an ill-smelling vaginal discharge, which within forty-eight hours was followed by headache and difficulty in deglutition, gradually increasing in severity. While attempting to drink some water

she became cyanotic and fell to the floor, seized with tetanic convulsions. This attack lasted for a few minutes, to again reappear when attempting to swallow. The jaws were firmly set, preventing the introduction of any food, face distorted, and speech impossible. The abdomen was sensitive to pressure. All the symptoms increased in severity, and the patient passed away while asking for some water.

In this case the muscles of the larynx and pharynx were especially affected, and it resembles a case reported by Heyse. The shaking of the bed, sudden flashes of light, and other external irritations never produced a convulsive attack, but every attempt to swallow, or only the intention to do so, was followed immediately by a well-marked spasm of the larynx and pharynx. The postmortem examination showed the existence of a puerperal endometritis and a thrombosis of the veins adjacent to the uterus. The heart and kidneys both showed degenerative changes, but tetanus bacilli were not found in these organs. Careful bacteriological examinations were, however, successful in showing the presence of these bacilli within the endometrium, but they were also found in the spleen and blood. Besides the tetanus bacilli, streptococci and colon bacilli were found in large quantities, and a number of other micro-organisms which could not be classified, but the characteristics of which are described in detail.

The Uniformly Contracted Pelvis of the Infantile Type.—Wiedow.⁴⁵ Although the uniformly contracted pelvis of the infantile type constitutes about twenty per cent of pelvic deformities, its presence is frequently overlooked. In the examination of the pelvis the diameters of the inlet are taken into consideration, while those of the outlet are apt to be neglected. This deformity usually exists in conjunction with other anomalies of the skeleton and stunted development of the generative organs. Obstetrical complications from this type of deformity are, as a rule, not very marked, and consist in protracted progress of the head in the outlet. The narrowed pubic arch necessitates a lower descent of the head to give room to the biparietal diameter, and this again causes increased expulsive pains to overcome the resistance of the pelvic floor. In most cases this resistance is overcome by natural powers, but extensive lacerations are not uncommon. The following are the main diagnostic points for this type of deformity: narrow pubic arch, elongation of the linea terminalis, high position of the promontorium, and a lessened curvature of the sacrum.

Missed Abortion.—Schaeffer⁴⁵ reports a case of missed abortion, with retention in utero of a blighted ovum for a period of ten months. During the first three months the pregnancy appeared normal; both the uterus and ovum grew in proper proportions. At the end of the third month, however, the embryo died of some unknown cause, but, instead of being expelled, was retained in utero without giving rise to any symptoms. At the end of ten months a menstrual colic was

described by the patient, which recurred twice at monthly intervals, and during the third menstrual epoch—that is, after a retention in utero for four hundred and fifty days—the product of conception was expelled. The latter is represented by a mummified fetus showing traces of chronic inflammation and various deformities. The amniotic cavity was perfectly dry and contained only old blood coagula. The chorion had undergone fatty and hyaline degeneration, in part fibrous changes, while the decidua was comparatively normal.

Grippe in Relation to Pregnancy.—P. Bar and Boullé⁷ have studied 50 cases of grippe occurring during pregnancy or the puerperium, 4 of these proving fatal. Of the 40 cases during pregnancy, 1 was of the nervous form, in 2 gastrointestinal symptoms predominated; all others were of the respiratory type. The observations showed that grippe complicating pregnancy was of a severe character, pneumonia occurring in 4 of the respiratory cases and 2 of these proving fatal. The authors infer that such terminations are directly contributed to by the grippe. Metrorrhagia was found much less frequently than by some observers, in only 2 of 40 cases, and in neither was pregnancy interrupted. In a few cases in which grippe began shortly before delivery the latter appeared to be hastened, but in others the disease seemed to have no abortifacient action. In 30 cases grippe beginning during pregnancy continued after delivery, in 10 it began subsequent to it. Study of these cases showed that grippe was particularly severe during the puerperium. Of the 10 cases whose onset occurred after delivery, 5 terminated in broncho-pneumonia.

Pregnancy with Occlusion of the Cervix.—Flandrin¹ reports a case of obliteration of the cervix following a forceps delivery with rupture of the bladder and the operative repair of the vesico-vaginal fistula which resulted. In a subsequent pregnancy the cervix was found to be completely occluded, and, after nearly eighteen hours of strong but ineffectual pains, it was necessary to incise the lower segment of the uterus, after which labor proceeded normally.

Multiple Pregnancy.—J. M. Sebrell² reports the singular case of a woman who gave birth to a male child and thirty-four days later to a female child. The first child lived about four hours and cried incessantly until death. The second child lived two weeks; nursed heartily the first week, and, without any known cause, was seized with convulsions and died.

Superfetation in the Human Race.—M. Herzog³ does not believe that the plug of mucus, as found in the cervical canal in pregnancy, will be a serious obstacle in the path of the spermatozoa, the less so since a plug of mucus is also frequently, if not always, found in the cervix of the non-pregnant uterus. The claim as to the absolute, unconditional non-occurrence of ovulation during pregnancy is likewise incorrect. It certainly appears that non-ovulation during pregnancy is the rule, but there are now cases on record which show beyond a doubt that

ovulation does occasionally take place during pregnancy in the lower mammalian animals as well as in the human being. He records 3 cases of superfetation in the human subject which have come under his observation. He looks upon superfetation not as a normal but as a pathological condition, which leads to abnormal processes in the course and termination of pregnancy.

Lactation during Pregnancy.—Poux⁴ holds that the occurrence of pregnancy is not a sufficient reason for suspending lactation or changing diet. When there is any indication for continuing maternal feeding, such as febrile disease of the child, dentition, diarrhea, youth of the nursling, summer heat, etc., this should be persisted in even beyond the sixth month of pregnancy, if necessary. The only exception to this rule is found in cases where the supply of milk is greatly diminished.

Spontaneous Rupture of the Gravid Uterus.—In discussing this subject R. Mercier⁵ agrees with the hypothesis advanced by Lewers that such an accident is due in all cases to an interstitial pregnancy. The writer describes a case which substantiates this belief.

Pathology of the New-Born in Relation to Labor.—Discussing the pathology of the new-born from the experience acquired in performing 143 autopsies, V. Wallich⁶ finds the lesions to be of three classes. The first, constituting two-thirds of the entire number of cases, includes intracranial or abdominal hemorrhages and visceral congestions, these violent deaths occurring most often with placenta previa or breech presentations. The second comprises lesions antedating labor, including affections of syphilitic origin; the third, lesions developed after birth, due to local or general infection, and occurring most often after protracted labors. As breech presentations, placenta previa, separation of the placenta, and procidentia of the cord are frequently found among those which show traumatism and infection, these conditions should be cared for as carefully as possible, and the fetus should not be employed for producing forced dilatation. Premature labor should not be resorted to as a therapeutic measure in the hope of saving the child.

Measurement of the Fetal Head.—Perret¹ has found by experiment in 94 cases that the following method of measuring the fetal head in utero gives nearly exact results. In each case he waited twenty-four to forty-eight hours after labor before taking the confirmatory measurements, in order that the head might resume its normal proportions. In every instance the diameter was found to vary not more than two millimetres from that estimated, with two exceptions; in these, errors of three and seventeen millimetres respectively were due to flexion of the head. The woman is placed at the edge of the bed, and after recognizing, by vaginal examination, the position of the head, the latter is placed in the transverse position by manipulation through the abdominal wall. The occipito-frontal diameter is then measured with the branched cephalometer, sub-

tracting from the gross measurement twice the thickness of the skin and subcutaneous tissue, determined by pinching up a fold. As the biparietal diameter is known to be approximately 25 millimetres less than the occipito-frontal, the former may finally be determined by subtracting this distance from the occipito-frontal estimated as described.

Puerperal Infection.—Ferré⁷ advocates curetting all cases of puerperal infection except those with very mild symptoms and of short duration. This procedure has given good results, both immediate and ultimate. Of a number of cases, on the other hand, which he had treated by simple irrigation, the majority showed subinvolution and chronic suppuration subsequently and some inflammation of the appendages. None were absolutely healthy, yet the immediate results in these cases had been favorable. The writer believes that treatment by irrigation alone simply causes an attenuation of the infection with temporary arrest of its progress. For curettage he claims 34 cases, with 1 death.

P. Rebreyand¹² records a case of puerperal infection apparently so slight that antistreptococcic serum alone was employed. The immediate effect was good, but the patient's general condition later became so serious that curettage and irrigation in addition failed to prevent a fatal termination. More than two hundred grammes of the serum were injected in all. He advises suture of lacerations of the perineum, curettage, and hypodermatic injections of normal saline solution.

Dolérís⁸ advocates systematic gynecological examination of all cases of infection during the puerperium by combined external and internal palpation, inspection of the vulva, vagina, and cervix with the speculum and traction forceps especially for traumatic lesions of the cervix, bacteriological examination of secretions of the cervix, and by catheterization of the uterus with a dilating sound. For infected cases he advises rest in bed, prolonged hot vaginal douches, applications of tincture of iodine to the vagina, intrauterine douches of bichloride, applications of creosote in glycerin, and uterine drainage with a strip of iodoform gauze. If subinvolution exists he administers ergotine hypodermatically; for ectropion, dressings with creosote in glycerin and with iodoform. If ectropion or an unhealed laceration with free secretion of thick, yellow mucus exists at the time when the woman is discharged from the maternity hospital, he cleanses the cervix, irrigates, dresses, and drains the uterine cavity, repeating this treatment every three days.

H. Manseau⁹ reports 7 cases in which irrigation of the uterus was tried as a cure for puerperal metritis. In every one of the seven cases recovery was complete, and with two exceptions, which were lost sight of, all became pregnant again.

Postpartum Hemorrhage.—Arendt.¹⁰ Uterine hemorrhage due to laceration of the cervix or atonic condition of the organ can be arrested by seizing the anterior and posterior cervical lips with volsella forceps and making strong down-

ward traction. Through such traction the uterine vessels are elongated and compressed and uterine contractions are induced. If necessary the uterus may be tamponed with gauze.

Accidental Hemorrhage.—Dreier¹⁰ reports 5 cases of premature detachment of the normal placenta, with one maternal death and the death of all the children. Contrary to the observation of most authors, Dreier states that in none of his cases was albuminuria present. He considers endometritis the most important etiological factor. Such a condition results in degenerative changes of the uterine vessels, which consequently easily tear, forming a post-placental hemorrhage. Dreier advises rapid evacuation of the uterus.

Schwarzwaeller¹¹ reports a case of accidental hemorrhage in a multipara 35 years old, about eight months pregnant. Without any warning the patient was seized with an attack of syncope, which repeated itself two hours later, this time accompanied by vomiting. Soon after this there was a slight flowing and the patient complained of great abdominal distension. Labor pains were absent. The face and also the visible mucous membranes were pale, and the patient had the expression as if suffering from a very acute anemia. The pulse was rapid and small; the fetal heart sounds could not be heard. The cervix was not dilated, but admitted two fingers. The membranes were ruptured, and after podalic version a dead fetus was slowly extracted. Delivery of the child was followed immediately by the expulsion of the placenta and large quantities of fluid and coagulated blood. Attempts to arrest the very severe bleeding by means of tampons and hot irrigation, also manual compression, utterly failed, and the patient died shortly after the delivery of the fetus. In such desperate cases it is permissible, as a last resort, to invert the uterus and arrest the bleeding through constriction of the cervix.

Cesarean Section.—M. W. Knight¹² reports two Cesarean sections. In one case both the mother and child survived the operation for a few days and then both died. In the other the child was delivered dead, but the mother made an uneventful recovery. He believes that craniotomy undertaken without rigid asepsis will produce a higher maternal mortality than Cesarean section aseptically performed.

W. H. Marcy⁴¹ performed a Cesarean section on a woman who had a very small pelvis. The mother and child both survived the operation. He diagnosticates the site of the placenta and tries to make his incision over its centre, cutting only a buttonhole in the uterus, inserting his finger as a guide, and making a five-inch uterine incision. The back of the hand at the same time compresses the placental site. Immediately on removing the hand the intrauterine pressure forces the placenta through the incision, and all one has to do is to use gentle pressure so that the placenta and uterine contents come away.

Riedinger¹³ reports 2 cases of Cesarean section in which he opened the uterus after the method of Fritsch. In examining

the first case some months after the operation, he was surprised to find the fundus of the uterus to be about 6 centimetres above the pelvic brim and adherent to the abdominal parietes. There existed, therefore, a not desired ventrofixation.

Siebourg¹⁵ reports 4 cases of typical osteomalacia with Porro operations and extraperitoneal treatment of the stump. One of these cases, an exceedingly delicate woman, who had been in bed for over three years, died from a trifling secondary hemorrhage. Siebourg prefers the Porro operation to the conservative Cesarean section with subsequent removal of the adnexa, on account of the greater rapidity with which the former can be performed.

Solowig¹⁴ reports a case of osteomalacia in which he performed Cesarean section with removal of both ovaries. The patient, who had been ill for three years, made an uneventful recovery, and within four weeks she was able to walk and leave the hospital.

Symphyseotomy.—G. Lepage⁶ reports in detail 8 symphyseotomies, followed in each case by a nearly normal puerperium. Six children survived, 1 could not be revived, and 1 died after forty-eight hours as a result of the treatment employed before resorting to symphyseotomy. These cases are presented as an argument in favor of following strictly Pinard's indications for the operation.

Edward P. Adams¹⁶ reports a case terminating in perfect immobility. The patient was kept in bed seven weeks; the rubber adhesive bandage was not removed until the end of the sixth week, when it was replaced by a new one. At the end of the tenth week there was slight motion visible in walking, but the gait was normal. In three months there was no motion whatsoever. He attributes the success of the perfect union to the long time the patient was kept in bed without removal of the rubber adhesive bandage.

Vascular Anatomy and Physiology of the Human Uterus; Etiology and Development of Uterine Myomata.—Keiffer,¹⁷ in a preliminary communication, states that, in his opinion, uterine myomata are the hypertrophic reaction of uterine tissue around thrombosed vascular segments, or are due to the encystment by uterine tissue of vascular segments which have been made useless by thrombosis or prolonged compression or other processes disturbing circulation. The uterus of the superior mammals, because of its complex muscular and vascular structure, lends itself much more easily to the development of myomata than the uterus of inferior mammals. These views the author believes to be confirmed by clinical experience.

Meningitis, Purulent Idiopathic, due to Pneumococci, and Double Pyelitis due to Streptococci, in a Pregnant Woman.—Verstraete¹⁸ states that there came to the service of Desplats a pregnant woman, age 17, suffering from meningitis. A few hours after entrance she was delivered, twenty hours after which she died. Autopsy: The pneumococci of

Telamon-Fränkell were found in the cranial lesion, but could not be found in the lungs, which were free of pneumonia, nor could they be found in any other part of the organism; no secondary lesions were found. Possibly the pneumococci came originally from the mouth, travelling thence through the pharynx and nasal fossæ. Double pyelitis was found; here streptococci were present, but no pneumococci.

GYNECOLOGY AND ABDOMINAL SURGERY.

The Relation of Pelvic Diseases to Nervous and Mental Affections.—Frederick Peterson¹⁹ takes the stand that the field of the gynecologist in the domain of nervous diseases is comparatively restricted and unimportant, and he strongly protests against the still prevailing tendency to enlarge the field of operative gynecology by unjustifiable and unscientific surgical interference in cases of nervous and mental diseases.

F. X. Dercum¹⁹ states that neurasthenia may exist independently of any local disease, pelvic or other; that there is no necessary relation between neurasthenia and pelvic disease when the two affections happen to coexist in the same case. He believes, also, that when pelvic disease occurs in a case of neurasthenia the pelvic symptoms may be more readily recognized by the patient and therefore become more prominent, because in neurasthenia there is an increased irritability, an increased reaction to local impressions, nervous weakness and nervous irritability going hand in hand. As regards hysteria, he concludes that it may exist independently of any pelvic disease, and that, if the two troubles do exist, there is no relation between them; that while in hysteria there is increased reaction to external impressions, this reaction is purely psychic. In hysteria the patient is exceedingly impressionable and reacts inordinately to impressions involving the affective faculties. This reaction to external impressions differs altogether from that seen in neurasthenia, for in the latter the reaction involves the nervous system as a whole. In hysteria the patient readily accepts the suggestion (often a spontaneous autosuggestion) of pelvic disease, especially as groin pain or inguinodynia is so common a symptom of hysteria. He remarks that all idea of curing neurasthenia or hysteria by operations upon the pelvic organs must be absolutely abandoned.

B. Sherwood Dunn¹⁹ expresses himself by stating that neurasthenia is a fatigue disease, and that it is brought about by the influence of a too unrelaxed subjection of the nerve cell and protoplasm to functional activity, let the source of this activity be what it may. Then the source of this irritation must be corrected if the patient is to receive any permanent benefit. He states that if neurasthenia is the result of a change in nerve cell, due to too great exercise of its functional activity, then disease of the pelvic organs furnishes the most frequent source of this irritation, and, as the primal cause, must be corrected if a cure is to be effected.

William H. Humiston¹⁹ states that the indication for operation is the finding of structural changes in the uterine appendages, with a history of exacerbations of symptoms at the menstrual periods. The contraindication is the finding of structural change in the nervous system, especially with a history of a tendency to mental disorders.

A. F. Currier²⁰ emphasizes the following points: 1. The nerve connections between the uterus and ovaries on the one hand and the viscera and central nervous system (cerebro-spinal) on the other are such as to warrant the belief in the abundant transmission of influences from the one to the other. As a corollary the removal of morbid conditions from the uterus and ovaries frequently results in the amelioration of disturbance in remote but related organs. 2. Surgical operations upon the female genital organs are sometimes followed by lesions of the nervous system, but not with much greater frequency than operations upon other structures. Their relative infrequency, especially when the uterus or ovaries are removed, demonstrates the wonderful accommodative power of the physical forces. 3. Insanity after operations of this character is of rare occurrence as a primary result of such operation and is usually transitory in its nature.

F. Savary Pearce and H. D. Beye²¹ believe that neurasthenia is often induced by lesions or abnormalities of the female genital organs. They state that the physiological relations of the female genital organs to the nervous system are particularly and clearly to be noticed at the epochs of normal menstruation, at the menopause, and in sexual excitement. They emphasize the importance of the determination of a distinct gynecological lesion, when the patient may complain of gynecological symptoms pointing to pelvic disease, before concluding that the neurasthenia is pelvic in origin. They also lay stress upon the importance and influence of the rest treatment, carried out in its fullest details, in many of these cases where the neurasthenia has been shown to be of gynecological origin. Lack of recognition of gynecological disease, on the one side, by the neurologist, or, on the other side, lack of appreciation by the gynecologist of the strong influence of the rest treatment in these cases (cause and effect), seems to them to be the stumbling-block in the cure of cases in which there is manifest association of two great factors in the causation of one of the most serious maladies in women.

Post-operative Psychoses.—Picqué,²² in discussing post-operative psychoses, states that in cases of actual insanity existing at the time of consultation operations should usually be avoided. There are also persons who are predisposed to post-operative delirium, though apparently of sound mind. In these a hereditary tendency or a history of previous mental affection may usually be obtained. A careful mental examination should precede all operations as a prophylactic measure.

Ocular Troubles Following Suppression of Menstruation.—Ocular troubles following suppression of menstruation

are divided by L. Thilliez¹⁶ into hemorrhagic, inflammatory, and reflex. The prognosis is best in the last class; in the inflammatory cases it depends on the existence, severity, and site of suppuration; in the hemorrhagic, upon the fatty or fibrous changes which they may cause in the tissues infiltrated and upon the intensity of the compression exerted upon the optic nerve and centres. Their treatment involves the restoration of the menstrual flow, failing in which it may be well to abstract a certain amount of blood by leeches or venesection from the vicinity of the genital organs, local treatment of the inflammatory process, and aiding the absorption of the hemorrhagic deposits by hot applications, etc.

Periodical Menstrual Delirium.—Trénel⁶ treats of certain rare forms of periodical menstrual psychoses. The delirium, which is maniacal, melancholic, or hallucinatory, usually begins suddenly at a variable time during the menstrual period and terminates in the same way. The treatment varies greatly. During the attack it should be symptomatic. For mania and hallucinations, sedatives such as potassium bromide, opium, and other hypnotics; for periods of depression, careful feeding. For circulatory disturbances hydrotherapy may be employed, with such restrictions as are imposed by the coincidence of the attack with menstruation. In some psychoses accompanied by a small menstrual flow bleeding gives favorable results; if menorrhagia is present, ergot may be indicated. In the intervals the treatment should be hygienic—rest in bed before and during menstruation. Some advise the use of bromides, others of atropine. Surgical treatment is sometimes successful.

Danger of Curettement after Abortion.—While it is undeniable that a curettement in some cases of abortion is an almost indispensable operation, it is also true that it is not as simple as is commonly supposed. The dangers of a curettement of a soft, friable uterus are again demonstrated in the report of a case of Dührssen.²³ In a case of abortion pieces of placenta were retained within the uterus, which Dührssen and another physician attempted to remove with the curette. The placenta, however, was so firmly adherent that the operation was suspended and the uterus tamponed with iodoform gauze. Forty-eight hours afterward the tampon was removed; it was then possible to introduce the finger within the uterus and remove the particles of placenta. At the same time the discovery was made that there were defects in the uterine wall, and, as there was also considerable bleeding, it was deemed advisable to remove the uterus per vaginam. The examination of the extirpated organ shows that portions of the uterine wall were removed by the curette. Such an accident in the hands of so competent an operator as Dührssen should, if nothing else, lead to the exercise of the greatest care in curetting the puerperal uterus.

Perforation of the Uterus.—Guérard²⁴ publishes an interesting case of a *IIpara*, 27 years old, who thought herself preg-

nant, and who experienced at the supposed end of pregnancy paroxysms of suffocation. A physician who was summoned to the case attempted to induce labor by the introduction of a bougie into the uterus. When seen by Guérard the woman had fever and the abdomen was enormously distended. The uterus measured eight centimetres, but the bougie had been introduced to a distance of twenty centimetres. As pregnancy could be excluded, the conclusion lay near that the uterus had been perforated and that the woman was suffering from sepsis. Upon opening the abdomen it was found that the woman had a tubercular peritonitis with marked ascites, and this, together with the cessation of menses, had led to the erroneous diagnosis. A tear in the left side of the uterus was closed by continuous sutures and the patient recovered.

Queisner²⁴ also reports a case in which he perforated the uterus with a Fritsch-Bozeman catheter. The patient had an adherent retroflexed uterus, which he rectified after the method of Schultze, and during the subsequent irrigation he perforated the uterus. The accident was not followed by any serious symptoms.

Cysts of the Vagina.—Joseph Godart²⁵ cites two cases: 1. A nullipara, married one year, age 21. Menstruation very irregular. Complained of a slight, dull pain in the lower abdomen on the right side, which had continued several months without exacerbation: no leucorrhea. Otherwise good health. Examination: A smooth, elongated tumor like an intestine projected forward from the right cul-de-sac as far as the median line, passing around the right side of the uterus as far as the level of the right utero-sacral ligament. Tumor slightly fluctuating and slightly painful on pressure. After douching the tumor was fixed and incised for about two centimetres in extent. Serous, slightly viscid fluid escaped. The interior was packed with aseptic gauze, the end of which was soaked in tincture of iodine to produce exfoliation of the lining membrane; two days after, dressing renewed; three weeks after discharge, a slight, somewhat deep diverticulum persisting, of which the edges were cicatrized. 2. A primipara, age 22, whose child was eleven months old; labor had been normal. No miscarriages. Pain in the lower part of the abdomen extending to the pubes. Had complained of prolapse of the vagina for three months. Locomotion difficult and painful. Examination: A soft tumor on the posterior wall, eight centimetres in length and shaped like an egg, filling up the lower portion of the vagina and protruding from the vulva. Its lower portion was translucent. The patient did not notice this tumor during the first months following confinement. Treatment as in Case 1. The author considers Case 1 to be of embryonic origin, due to the persistence of appendages of the Wolffian bodies. Case 2 he considers the result of a vaginal thrombus formed during labor and followed by cystic development provoked by walking and work. The author thinks the treatment of Pozzi for vaginal cysts too heroic except for those of a malignant nature.

Cysto-fibro-myxoma of Ovary.—M. Pierre¹⁵ states that a nullipara, age 22, entered the service of Duret with an abdominal tumor which could be felt by the finger in the vagina. Laparatomy: a tumor as large as the head of a child 2 years old, of fibrous consistence, its pedicle being the left tube. The ovary had disappeared, or rather was the origin of the tumor. There were no adhesions. A spheroidal tumor, presenting at its summit a hard disc, appearing like a piece of porcelain as large as the palm of the hand. On incision a brownish-yellow fluid, having the appearance of albumen, appeared and rapidly formed in large clots. The cavity was very irregular. Many trabeculae were formed by a gelatinous substance. The walls were made up of two distinct layers: the external layer was very vascular and was formed of fibrous tissue; the internal was formed of ordinary myxomatous tissue. Here and there an embryonic infiltration, ill-defined and not characteristic of sarcoma, was found. There was no trace of Graafian follicles. The yellowish-brown liquid was probably extravasated blood.

Surgery of Pelvic Inflammation.—Monod¹⁶ states that in pelvic suppurations where fluctuation is evident in the vagina, and also in cases where fluctuation cannot be found and where the mass may feel hard, but where by other signs pus is diagnosed, puncture and drainage will suffice for a cure. But there are cases where this treatment will not suffice. Sometimes the lesion seems fluctuating, but the vaginal mucous membrane seems to glide over the tumefaction, which is evidently distinct from the vaginal wall. The situation of the lesion may be high up, at some distance from the cul-de-sac, on the side of the uterus, occupying the space where lesions of the tubes or ovaries are usually found. Here we may cut through the vagina without finding a drop of pus; if the finger is then introduced it feels a more or less thick wall, which, when incised, is found to be the supravaginal peritoneum, behind which the pus is accumulated. Upon this second incision pus will flow from this secondary cavity. It seems, then, to the author that at the first incision we come upon a sort of encysted pelvic peritonitis, which we may call perisalpingitis to distinguish it from ordinary pelvic peritonitis; while by the second incision we come upon a primary lesion of the tube or ovary. In one of the author's cases operation by vaginal incision on the left side revealed a pus cavity, which was drained successfully, the emptied cavity closing up. Subsequently, by combined touch, a fluctuating mass was found in the region of the tubes; laparatomy revealed on the right side a thickened, inflamed, but not suppurating tube. On the left side little trabeculae containing pus were found in the tube. Above this tube was a circumscribed pus cavity situated at the left and behind the uterus, having in front of it the broad ligament, absolutely healthy. An autopsy upon another case afforded a further proof. A collection of pus encysted in the pelvis was found, in the midst of which there was a distinct, circumscribed tumor also containing pus. No pus was found in the broad ligament.

The author thinks, therefore, that in the majority of cases a simple vaginal incision will not suffice; laparotomy should be performed, by which, after entering the peritubal tumefaction, a second more deeply seated tubal or ovarian lesion should be sought for. The author submits reports of 25 cases.

Charles J. Cullingworth²⁷ believes that in suppurative pelvic cellulitis the operation should always be performed without opening the peritoneal cavity. Fortunately the abscess in the majority of cases points externally, above Poupart's ligament, indicating the proper site for the incision. In cases, however, in which the suppuration occurs in the neighborhood of the pelvic glands—that is, behind the posterior parietal layer of the pelvic peritoneum—the abscess is too deeply seated to point, and its very existence is often a mere matter of inference. The desirability of operation is here not so universally acknowledged. More rare situations for the pus to collect are between the bladder and the cervix uteri and behind the posterior wall of the vagina, generally on one side. Still more exceptionally cases are now and then met with where pus makes its way out of the pelvis through the sciatic notch or beneath Poupart's ligament along with the blood vessels, or upward into the loin along with the ureter. He states that operative interference is not called for in cases of pelvic peritonitis due to simple catarrhal salpingitis, but is in all cases attended with the formation of pus. It being difficult to always make a correct diagnosis as to whether pus is present or not, he makes the following suggestions as to the advisability of operating or not:

After the subsidence of the acute symptoms in a case of pelvic peritonitis due to tubal inflammation, a bimanual examination reveals the presence of a swelling in the posterior fossa of the pelvis on the side affected, extending not infrequently into the pouch of Douglas. In an uncomplicated case of non-suppurative or catarrhal salpingitis, this swelling is formed by a thickened and enlarged Fallopian tube fixed by its adhesions to one or more of the surrounding parts—namely, ovary, broad ligament, posterior aspect of the supravaginal portion of the cervix uteri, and the peritoneum covering the floor and walls of the pelvis. It is often possible to trace the tube as a thick cord from its commencement near the cornu of the uterus, and to follow it as it turns backward and downward, winding round and embracing the normal or perhaps edematous ovary. The outer extremity of the tube can seldom or never be defined, but it may be presumed to lie where the hardness is most marked and where it is evident the inflammation has been most intense. This condition is one in which, under favorable circumstances, gradual recovery may be expected to take place without operation.

If, however, such a swelling is larger than would be accounted for by the pathological conditions just described, and is found to be increasing in size in spite of rest in bed and the local application of warmth, it is almost certain that pus is present, and the indications for surgical intervention are clear.

Again, if during an attack of acute inflammation of the uterine appendages a tense, lobular, cystic swelling be formed in the pouch of Douglas, bulging downward into the vagina and backward into the rectum, the probabilities are strong that the swelling is an intraperitoneal abscess. Even if the contents of the distended pouch prove to be serous and not purulent, the relief of tension is necessary, so that here again the need for surgical interference is imperative.

Another occurrence, the importance of which from a diagnostic point of view can scarcely be overestimated, is the outbreak of recurrent attacks of pelvic peritonitis in a patient who has had an acute salpingitis and in whom there has remained a quiescent but obvious swelling in the posterior part of the pelvis.

Immediate operative interference is indicated in those cases in which, with a more or less definite history of pelvic inflammation and the presence of a localized swelling above the vaginal roof, there are symptoms of general septic infection.

C. Jacobs,²⁷ after considering the results of 713 operations, concludes that pelvic purulent inflammations must be attacked by the vaginal route, puncture, drainage, evacuation, when it is periuterine. If localized in the appendages of one side only, it must be punctured and drained by the vagina or the abdomen, or taken away through the one or other of these routes; the abdominal is often preferable. If the infection of the appendages is bilateral, there will be more advantage in doing total castration by the vagina. Disease of recent date should be attacked by the abdomen.

A review of the indications and contraindications for vaginal celiotomy leads Theodor Landau²⁷ to formulate the following directions:

1. All plastic and orthopedic operations on the normally-sized or only slightly enlarged uterus and the normally-sized or only slightly enlarged movable adnexa can be done by the vagina; for instance, the surgical treatment of retroposition of the uterus, of descent of ovaries, plastic operations on the tube, ovarian resection, etc. Here he mentions also suture of the ruptured uterus (Dührssen).

2. In cases of genuine tumors of the internal genitals:
(a) *Myomata* of the uterus, up to the size of a child's head, can be operated in this way, be they subserous, submucous, or interstitial. As an aid to the operation it is necessary to have acquired the technique of median section of the uterus and of morcellement. It will depend on the practice and experience of the operator how great may be the size of the tumor to be removed by the vagina. (b) *Ovarian Tumors*.—The size of unilocular tumors is of no importance at all. But in multilocular tumors the operation may offer the greatest difficulties, and this condition can scarcely ever be diagnosed with certainty. Excluding the malignant tumors, which, as observed, must never be operated by vaginal celiotomy, papillary tumors (fibro-epithelioma), nay, also, dermoid cysts, are very little

adapted for this operation, especially when complicated by adhesions. Undoubtedly benign ovarian cysts are also excluded when one is not absolutely certain that owing to their size the abdominal cavity will not be soiled by their contents when they are incised. The contents of dermoid cysts, smeared over the abdominal cavity, can produce local peritonitis, and the contents of benign ovarian cysts may by implantation be the origin of the development of benign growths which may later undergo malignant degeneration.

3. In every case of malformation of the genitalia vaginal celiotomy is forbidden, because one cannot become acquainted with the situation from the vagina.

4. On the other hand, the operation has triumphs in the various stages of extrauterine pregnancy, whether we have to deal with a living ovum or with a tubal abortion in all its various forms, with a ruptured or unruptured tube, fresh hemorrhage, or with intraligamentous or extraligamentous peritubal hematoma. Exceptions to this rule are, as has been described elsewhere, cases of ruptured extrauterine pregnancy which are complicated with severe chronic diffuse inflammation of all the internal genital organs, and finally cases in which the ovisac extends as high as the navel.

He cannot advocate the extirpation of inflamed adnexa, unilateral or bilateral, by means of vaginal celiotomy. Even if the operation is successful the majority of the cases are not benefited. Vaginal celiotomy is dangerous in the presence of any considerable changes of an inflammatory nature. Not only are bladder and ureters in danger in the presence of pericervical retraction and shrinking, but the added danger exists that in the inelastic and shortened ligamenta infundibula pelvica it may be impossible to ligature the blood vessels, and that these vessels may tear during the attempt to free the adnexa and to form a pedicle, there being no possibility of operating *in situ*.

In all cases in which the uterus does not come down when pulled upon, or in which descent is simulated by an extension of the cervix, while the vagina, remaining *in situ*, is bent obtusely in its upper part, we should keep our hands off; for when such a condition exists we shall most likely not be able to luxate the uterus without injuring or tearing it or its adjacent organs. This extensibility of the anterior vaginal wall is lost, especially in the severe inflammatory cases, and for this reason he here mentions this sign.

Operation for Retropositions of the Uterus.—Paul Gelpi²⁸ describes the following operation as performed in Prof. Richelet's clinic in Paris. Antiseptic precautions are taken as in vaginal hysterectomy. The patient being placed in the dorsal position, the uterus is brought well forward by a volsella grasping the anterior lip of the cervix, and an anterior colpotomy is performed by making a transverse incision about an inch above the level of the external os. The vagina is well separated from the uterus, the bladder is dissected away and pushed upward

and forward, and the peritoneum is opened so as to bring the anterior aspect of the uterus well into view. Another volsella is made to seize the organ just above the isthmus. The body of the uterus can then be tilted forward *ad libitum*. The uterus must now be bound by three transverse catgut sutures to the freshly cut surface of the anterior vaginal wall. These sutures are passed from left to right, first into the superior position of the liberated vaginal flap at a point near its first margin, then deeply into the substance of the uterus, reappearing at a corresponding point on the opposite side. They must be introduced immediately above the volsella, so as to leave the greater part of the body and the fundus free. They should be placed as near together as practicable. These sutures are tightly secured, and a vertical line of sutures is thus obtained. The remainder of the vaginal flap is then brought into apposition with the fresh cervical margin of the incision. This is done by means of three or four vertical catgut sutures on each side. By so doing downward traction is exercised on the superior position of the vaginal flap and the uterus is naturally dragged forward and downward back to its normal position. The original incision is thereby made to simulate an inverted T. The vagina is then packed with sterilized cotton tampons sprinkled with iodoform. These are allowed to remain *in situ* from five to eight days.

Torsion of the Uterus.—While torsions of ovarian cysts and pedunculated tumors are relatively frequent, twisting of the corpus uteri is a rather rare accident. Schultze²⁹ collected 26 cases out of the current literature, to which he adds 6 new cases. In 15 of these cases twisting of the uterus was caused by fibroids, while in the remaining 11 the accident was due to an existing ovarian cyst. It appears as if the puerperal state predisposes to this accident. And Schultze also believes that the resistance of the pelvic walls against the growing tumor may lead to torsion of the uterus. The symptoms of the latter are the symptoms caused through circulatory obstruction, congestion, hemorrhage, necrosis of the tumor, and possibly peritonitis. The diagnosis is not easy and may even be called difficult. Schultze states that the absence of the ovaries from their normal situation, together with the above-described symptoms, should lead to suspect twisting of the uterine body.

Alexander's Operation without Buried Sutures.—P. de Gottal³¹ has employed the following method in two instances. The anterior wall of each inguinal canal is incised, exposing the round ligaments, and the uterus is anteverted by traction upon them. While the ligament is held at the inner side of the wound, a needle is introduced two centimetres below the upper part of the wound, passing through the crural arch and all the tissues beneath the aponeurosis of the external oblique. One end of a silver suture is threaded upon the needle and the latter is withdrawn. The other extremity of the wire is similarly drawn out at a point one centimetre below the other, the suture thus forming a loop which when tied

unites the parts constituting the posterior wall of the canal. Three or four similar loops are used. The ligaments are then restored to their normal position, maintaining tension upon them, and sutures are passed, entering the skin one and a half centimetres below the wound and traversing successively the lower part of the anterior wall of the canal, the round ligament, upper part of the anterior wall of the canal, and emerging through the skin above it as it entered. After all are inserted the deep loops are twisted over rolls of gauze and the superficial sutures are then tied. All are removed after the eleventh day.

Post-operative Abdominal Drainage.—Keiffer¹⁷ formulates the following indications for post-operative peritoneal drainage: 1. After laborious enucleations of infected pelvic tumors, such as suppurating or gangrenous fibroids, abscesses of the ovary or tube, carcinomata, sarcomata, and malignant tumors in general. 2. After laparatomies for retrouterine hematocele or tubal hematmata, whether following an ectopic pregnancy or not. 3. After laparatomies in which the traumatism has been prolonged and has necessitated an extensive lesion of the peritoneum and the adjacent viscera. 4. After curettage for retention of the placenta complicated by severe non-saprophytic infection.

Prolapse of the Uterus.—J. A. Ouimet²² advocates Le Fort's operation for all cases of prolapse of the uterus which are completely reducible. While perfectly efficient, the partition of the vagina does not interfere with sexual relations, conception, or even delivery.

Ectopic Gestation.—N. G. Bozeman²³ cites 2 cases to illustrate that in cases of ectopic gestation the placenta continues to grow. In 1 case the woman was supposed to be twelve weeks pregnant, the fetus was very small, but the placenta was large and was still weakening the walls of the tube. In this case he supposed the fetus had stopped growing some time before the operation. In the other case no fetus was found, but the placenta and amniotic sac were present. All the evidence pointed to a rupture of the tube due to the growth of the placenta.

R. MacLean Taft²⁴ reports a case of extrauterine gestation of the interstitial variety which terminated by rupture into the uterus. The woman lost a considerable amount of blood, but recovered.

Jacobs¹⁷ records operations upon 2 cases of extrauterine pregnancy. He calls attention to the fact that in 1 of these the appendages showed lesions upon both sides.

Beckmann²⁹ differentiates two forms of interstitial pregnancy, namely, graviditas tubo-uterina and interstitialis propria. The latter is less frequent but far more dangerous. Among 1,324 cases of extrauterine pregnancy there occurred only 40 of the interstitial variety. Beckmann observed and reports a case of interstitial gestation with rupture of the sac which he cured through laparotomy and supravaginal amputation of the uterus. In diagnosing interstitial gestation it is generally

noted that the size of the uterus does not correspond with the estimated period of pregnancy. Besides this, there are the symptoms of internal hemorrhage and an absence of tubal enlargement. The removal of the sac from the uterus is rarely possible.

Neugebauer³⁴ publishes a case of extrauterine pregnancy in a woman 36 years old, in which he performed laparotomy and extracted a full-grown living child. There was not a vestige of fetal membranes, and the child was found to lie free within the abdominal cavity. The placenta was attached to the posterior wall of the bladder. The child died nine hours post partum. The mother recovered. In discussing the case the author concludes that originally the case was one of tubal pregnancy which ruptured at an early period, whereupon the child continued to develop within the peritoneal cavity.

Wm. D. Haggard, Jr.,²⁰ makes the following recommendations: 1. In unruptured ectopic gestation the vaginal operation, if congenial to the surgeon, may be elected. 2. In non-active cases of encysted hematocele vaginal section and drainage is the operation of choice. 3. The situation of the mass low down and the broad, roomy vaginae of parous women are favorable to the lower route. 4. Before evacuating ectopic collections per vaginam, preparation for abdominal section should be made. 5. In free or uncontrollable hemorrhage, after removing the products of ectopic gestation vaginally, the abdomen should be opened at once. 6. When abdominal section is necessary after colpotomy, the preliminary vaginal incision (a) will confirm the diagnosis; (b) facilitate the abdominal work by removing clots through the vagina instead of through the abdomen; and (c) establish an efficient avenue for drainage. 7. The vaginal operation in appropriate cases is attended with less mortality.

Epithelioma of the Chorion.—Marchand,²⁹ in a very exhaustive paper, attempts to reconcile the varying opinions of different authors about the nature and origin of the malignant degeneration of the decidua. The author formerly believed that the deciduomata were epithelial in character, composed of syncytium and elements of Langhans' cell layer. The syncytium was said to be a maternal structure, while the cell layer was thought to be derived from fetal ectoderm. Most other authors, however, believe the syncytium to be also a fetal structure, and Marchand admits that many of the arguments are strong and not easily disproved. In his latest publication Marchand differentiates two forms of deciduomata—a typical and an atypical variety. In the first form the chorionic epithelium remains unaltered and retains the same character as during the earliest period of pregnancy. In the second form the epithelium is represented by numerous but still isolated cells. There are also intermediate cases. The atypical cases may resemble carcinomatous or sarcomatous growths, while typical cases always retain the pronounced chorionic character.

Cancer.—W. Roger Williams³⁵ states that in England and

Wales the increase of mortality from cancer has been rapidly growing. In 1840 cancer caused 2,787 deaths, the proportion being 1 in 5,646 of the total population and 1 in 129 of the total mortality, or 177 per million living. In 1896 the deaths due to it numbered 23,521, or 1 in 1,306 of the total population and 1 in 22 of the total mortality, or 764 per million living. Thus the proportionate mortality from cancer now is four and one-half times greater than it was half a century ago. In this its position is unique, for no other disease can show anything like such an immense increase. While the cancer mortality for males from 1851 to 1890 has increased 167 per cent, the increase for females has been but 91 per cent. It seems to him probable that this undue incidence of the increasing cancer mortality in males may be ascribed to the fact that of late, as the result of urbanization, the conditions of life for men have come to resemble more closely those for women than heretofore. Excess of food, with want of proper exercise and changed surroundings, are, he thinks, its chief causative agents.

James H. Etheridge²⁶ advocates the use of calcium carbide for the relief of cancer of the uterus. He reports two cases treated by this substance which were greatly relieved. He is uncertain as to the therapeutic agent, but thinks it is the acetylene gas.

Willis Hall²⁰ reports a case of carcinoma of the ovary in an hermaphrodite. The patient had a very much elongated clitoris, with a rudimentary glans and a slit in the glans where the urethra should have been, with a well-pronounced prepuce, and under this prepuce was unmistakable smegma. It was found under chloroform that the depth of the uterus was small.

Uterine Fibroids and Pregnancy.—The enucleation of a uterine fibroid through an incision in Douglas' cul-de-sac without disturbing a pregnancy of three months is recorded by Van Hasselt.¹⁷

Fetid Hydrorrhea in a Case of Small Uterine Fibromata.—Junior Vitral²⁶ cites this case to prove that fetid serous discharges are symptomatic not only of uterine cancer, but may be found also with uterine fibromata. On autopsy the uterus was found enlarged; two small, pediculated fibromata in the anterior lip. There was one, as large as the end of the finger, in the body beneath the peritoneum, and a submucous fibroid in the metrium. There was concurrent metritis. The epithelial cells were found normal. There was fetid hydrorrhea wherever the fibromata occluded the lumina of glands and were obstacles to normal secretion. This patient was 49 years old. Pathological conditions in such a case may simulate the menopause; fibromata may occasion metritis, pain, and dysmenorrhea sufficient to act in this way.

Medicinal Action of Placenta.—Iscovesco³⁷ has employed tablets prepared from the placenta of the sheep in sixty cases of chronic metritis with hypertrophy and catarrh and no lesions of the appendages. In every case four to six tablets, each representing twenty-five centigrammes of fresh placenta, are

claimed to have caused a rapid and marked amelioration of reflex symptoms.

Ovarian Serum Therapy.—By experiments upon animals *Ferré* and *Bestion*³⁷ find that ovarian extract is less toxic in its action upon normal females than upon males or pregnant or castrated females or young females in whom the ovaries have not begun to functionate. In healthy adult females a tolerance seems to have been established. The authors call attention, in view of these observations, to the advisability of administering ovarian extract with caution to pregnant women and those in whom a natural or artificial menopause has occurred. *Bestion de Camboulas* has noted improvement under this treatment in four cases of troubles following castration, and in cases of chlorosis with amenorrhea the menses reappeared and the general condition was greatly ameliorated. *Etienne* and *J. Demange* believe that chlorosis is due to insufficient ovarian secretion, and so consider the administration of ovarian extract logical treatment. Seventeen clinical cases observed appear to bear out this opinion. As some other organic substances seem to relieve chlorosis, it is possible that they might be substituted. *A. Gilbert* and *P. Carnot* have found ovarian extract efficacious for troubles following castration, and somewhat less so after castration, rarely after genital affections. Its value in chlorosis is considered unproved.

Disinfection of the Hands by Means of Alcohol.—Upon the suggestion of *Löhlein*, *Tjaden*²⁹ has made extensive investigations to finally test the value of alcohol as a disinfectant of the hands. The investigation proved that, contrary to the reports of *Ahlfeld* and others, alcohol has but a doubtful value. In 11 experiments with absolute alcohol the hands were not sterile in 6 cases; 58 experiments with ninety-six per cent alcohol showed germs present in 46. Out of 19 cases in which the hands were disinfected with eighty per cent alcohol cultures could be made in 13, while in 11 attempts with fifty per cent alcohol, in 9 bacteria could still be grown. As might be expected, the germicidal properties of alcohol varied with different cocci, but it was found that seventy-five per cent and ninety per cent alcohol had greater antiseptic properties than absolute or fifty per cent dilution. In 402 experiments with the hands of midwives, the hands were found free from germs only 9 times.

Papilloma of the Fallopian Tube.—*J. G. Clark*³⁸ states that up to the present time only 6 cases of simple non-malignant papilloma of the Fallopian tube have been reported. He reports a case of the above variety. The papillomatous growths throughout had a non-malignant appearance, the epithelium being in general one-layered and at no place tended to invade the underlying tissue. Besides the papillomatous growths there were cystic spaces, so *J. G. Clark* believes it can be classified under the title of papilloma tubæ cysticum s. vesiculosum.

Removing Hairpins from the Bladder.—*Andrew F. Cur-*

rier¹⁹ prefers to incise the vaginal wall in nearly all cases of hairpin in the bladder. If the case is a fresh one, it is a simple matter to remove the hairpin through a small opening, irrigate the bladder, and immediately close the wound. If the case is one of long standing, the bladder should be opened to permit drainage and relief to the chronic cystitis. If a stone must be crushed, it can be done with great ease through such an opening.

Nature and Management of Puberty.—W. S. Christopher²⁰ submits the following conclusions: First, that puberty is the period for the latentization of force for reproductive purposes. Second, that this latentization requires a high nutrition and relatively low activity for its best accomplishment. Third, that failure to properly meet this demand leads immediately to the development of pubescent disorders and ultimately to reproductive deficiencies. He believes that while it is contended that puberty is a period for high nutrition and low activity, it is not contended that every child should be fed excessively at this time without reference to its factor of digestion or its oxidizing capacity, which later at puberty is apt to be low, or that its school work should always cease or its play be curtailed, but that these factors should be used as a guide and employed with careful judgment with reference to the child's total condition.

Tubercular Peritonitis.—Jacobs¹³ reports three cases of tubercular peritonitis as cured by exploratory abdominal incision and withdrawal of the ascitic fluid.

Precocious Menstruation.—De Vlacos⁶ reports a case of precocious menstruation beginning at 6 months and continuing at intervals, gradually diminishing from forty days until the child menstruated every four weeks at the age of 6 years, at which time the genitals and breasts were well developed.

Vaginismus.—As a final resort in two obstinate cases of vaginismus, and with most satisfactory results, J. Godart²⁵ divided the sphincter vaginae at each side through short incisions parallel to the vulvar opening. Catgut sutures are advised for the hyperesthetic region to avoid the necessity of subsequent removal.

Gonorrheal Urethritis.—J. Chéron³² advocates the treatment of urethritis in women by injections of four cubic centimetres of a saturated aqueous solution of picric acid two or three times each week. This has been successfully employed at Saint-Lazare for twenty-six years.

Senile Atresia of the Vagina.—Otto Engström³⁰ describes a case of atresia of the vagina following senile vaginitis. When the septum was broken down about five litres of a yellowish-red fluid escaped and the large abdominal tumor which had previously existed disappeared.

Rectal Operations.—The considerable bleeding accompanying operations on the rectum, which is generally venous in character, is combated by a both simple and effective method, described by A. Martin.¹⁵ Martin places four deep ligatures

at a distance of three to four centimetres from the field of operation and then proceeds to the extirpation of the hemorrhoids, polypi, etc. The rectal mucous membrane is united to the skin through interrupted ligatures, after which the aforementioned sutures are removed. Martin reports 23 operations with uniformly good success.

T. C. Martin³³ believes that the employment of the sound within the movable rectum is not consistent with the mechanical principles upon which the practice of surgical sounding is based; that to enter a stricture by such means is possible, but often impracticable; that the attempt is fraught with danger, and as a diagnostic instrument that the sound, as commonly used, is never reliable.

Prolapse of Rectum.—Paquet⁴⁰ cites a case in the clinic of Phocas, a child 11 months old. There was a prolapse twelve centimetres long and two and one-half centimetres in diameter, the inversion beginning at the edge of the anus. The mucous membrane was rough, inflamed, and formed two or three very deep folds. The pre-anal groove was obliterated. After reduction by the use of a compress coated with borated vaselin, two sutures were passed at the border of the anus through each buttock and fastened over two small tampons of iodoform gauze. Four days after the sutures were removed two drops of Sydenham's laudanum were given each day. Patient remained six days after removal of sutures. Prolapse did not recur. Defecation was performed between the tampons. The sutures are not sufficiently stretched to prevent defecation. An additional though slight advantage is claimed for the cicatrices resulting from the punctures at the verge of the anus. This method has been performed by Phocas for four years. No infection or suppuration has resulted. Chloroform is not needed. In this case cauterization or posterior perineorrhaphy was out of the question, owing to the weak condition of the child.

Uterine Myomata and their Influence upon Sterility and Conception.—Under this head Frankel⁴³ publishes an exhaustive paper, in which he combats the theory of Hofmeier, who believes that uterine myomata neither cause sterility nor diminish the percentage of conception. In analyzing the material of Hofmeier and his own cases he obtains figures which show a greater percentage of sterility in women suffering from uterine fibroids. In the second half of the paper Frankel adduces proofs of the fact that myomata reduce sterility even in cases in which the tumor offers no direct mechanical obstacle to conception, and it is quite probable that, owing to the presence of the tumor, changes in the uterine mucous membrane are the immediate cause of diminished fertility.

Riedinger⁴⁴ reports two cases of fibromyomata of the colon. The first case occurred in a woman 38 years old, who first came under observation during labor. Riedinger diagnosed a pelvic tumor and a rupture of the uterus. Laparotomy was performed and a full-grown child, recently dead, was

extracted from the uterine cavity. The pelvic tumor was a fibroid originating from the muscular layer of the rectum. The patient died nine hours post partum. In the second case a young woman came under observation with a large abdominal tumor double the size of a man's head; it was thought to be a tumor of the kidney. Laparotomy, however, showed this diagnosis to be erroneous, because the tumor grew from the flexura coli and colon descendens.

Injuries to the Ureter.—Fueth⁴⁰ describes a unique case of injury to the ureter, which is sufficiently interesting and important to merit a somewhat extended report. Injuries to the ureters during operations upon the pelvic organs are not quite as rare as supposed. The most usual point of injury is that portion of the ureter situated within the pelvis. The accident occurs in difficult laparatomies, as well as in vaginal operations for inflammatory diseases of the adnexa with extensive adhesions. Less frequently the injury is found above the pelvis. It may complicate the removal of excessively large abdominal tumors, especially those which in their growth have encroached upon and lifted up the pelvic connective tissue and peritoneum, producing a displacement of the ureter, which is usually found upon the summit of the tumor. Although this is all well known, the ureter nevertheless continues to be injured. These injuries are not always recognized, especially if only one ureter is ligated or obstructed by the compression forceps used in the removal of the uterus. In such cases we may have as an only symptom a dribbling of urine from the vaginal wound, because the pain emanating from the compressed ureter is overshadowed by the pain due to the operation itself. If the ureter has been compressed laterally the dribbling may cease spontaneously, or if obstructed transversely a uretero-vaginal fistula may follow. An injury to the ureter may pass, however, without any marked symptoms, as exemplified by the report of Fueth's case.

In this case the right ureter was accidentally ligated, with no other symptom than a feeling of pressure in the region of the right kidney, lasting for about twelve hours. The method of treatment which should be adopted, if the continuity of a ureter has been destroyed, varies with circumstances and conditions. It especially depends upon the location of the injury. If the latter is in the neighborhood of the bladder its implantation into this viscus is self-evident. The technique of this operation is quite simple. This method is more certain and less difficult than to unite the two severed portions of the ureter. Less favorable are the conditions if the injury happens above the linea innominata. In such cases an implantation into the bladder is an impossibility; and usually a uniting of the divided ends is also impracticable, because a large portion of the ureter is usually destroyed and removed. The implantation into the gut, although technically not very difficult, is certainly inadvisable, because sooner or later infection from the gut will reach the kidney and give rise to serious disorders. If assured

that the other kidney is healthy and capable of performing all functions, the extirpation of the injured organ could be indicated, but, as this is an uncertainty, it is not prudent to remove an organ which may be essential to life. In Fueth's case laparotomy was performed for the removal of an immense uterine fibroid and of an ovarian cyst. The course of the ureter extended over the summit of the fibroid, and in the removal of the tumor a large portion of the ureter was extirpated. The accident was discovered while the abdomen was still open, and it was at first thought advisable to extirpate the kidney. Because of the fact, however, that the primary operation had been prolonged the patient's chances were deemed best by leaving the kidney intact, firmly ligating the divided ureter, and awaiting further developments. Four hours after the operation the temperature was normal and the pulse 90. The bladder contained nearly pure blood, which was removed by the catheter, and the patient complained about a dull pain in the region of the right kidney. The bloody character of the urine gradually disappeared, and within twenty-four hours of the operation the patient passed nearly five hundred cubic centimetres of urine. The lumbar pain also improved and the patient's recovery was as smooth and uninterrupted as could be desired. The kidney underwent a cystic degeneration; then, about seven months after the operation, a large fluctuating tumor could be felt in its place, which, however, gave rise to no unpleasant symptom and about the existence of which the patient was perfectly ignorant. This case conclusively proves that hydronephrosis may exist in man without impairing the general health, which fact, in animals, has already been demonstrated by the experiments of Heidenhain and others. In cases, therefore, in which the injury to the ureter is of such a character that neither implantation into the bladder nor direct junction of the severed ends is practicable, it is advisable to ligate the divided ureter, postponing the extirpation to some later date or avoid it, if possible, altogether.

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DISEASES OF CHILDREN.

Atresia, Congenital Intestinal, and its Treatment.—Franke¹ reviews the literature on this subject and finds that, while atresia of the small intestine may occur at any point, it is most common at the point of entrance of the ductus communis choledochus, at the cecum, and at the pylorus. The case reported in the paper was that of a baby 2 days old whose bowels could not be moved, who vomited all food and finally meconium, and whose abdomen was distended on the left side. Laparotomy demonstrated the fact that the distended ileum ended blindly twenty-five centimetres above the cecum, the lower end being atrophied but pervious. Entero-anastomosis was done, and the child did well until the third night, when there suddenly appeared symptoms of peritonitis, and death resulted in a few hours. At the autopsy the intestinal sutures were found to have given way, causing fecal leakage and acute peritonitis. At no point were there any signs of an older peritonitis causing the atresia, and Franke inclines to the view that the condition owes its origin to the pressure of Meckel's diverticulum, which is normally present at about this point, and which later atrophied as usual, no trace being found at the autopsy.

Biliary Tubercles and Biliary Cavities in the Child.—G. Jacobson² defines *biliary tubercle* as any tubercle of the liver which is stained with bile. When this biliary tubercle is hollowed out and contains a thick and bile-like fluid it is a *biliary cavity*. He concludes a long and detailed account of his researches into the nature of the disease as follows: 1. From the point of view of pathogenesis, tuberculosis of the biliary passages is not a special form of hepatic tuberculosis, nor is it characterized by the systematic development of tubercles around the biliary passages. 2. Biliary tuberculosis is merely an ordinary caseous tuberculosis, which in developing has surrounded and ulcerated a bile duct. 3. Tuberculosis of the bile passages always coincides with a general tuberculosis with caseous nodules. 4. In tuberculosis of the bile passages infection of the liver does not occur through the bile ducts, nor through the lymphatics, nor through the portal vein, but through the hepatic artery. 5. In short, tuberculosis of the bile passages is merely the manifestation in the liver of a generalized tuberculosis with cheesy nodules.

Debility of Adolescence, The.—Louis Faugères Bishop³ says that during the period of adolescence, when the active forces of early development have begun to wane and the solidification of maturity has not yet taken place, the organs are especially susceptible to damage from whatever causes may be active. The poison of tobacco is badly borne by the heart; acute infectious diseases have a greater liability to involve the kidneys; acute gastric attacks are frequent; temporary nervous affections, such as hysteria and melancholia, are met with in persons who are free from them in later life. Headaches due

to debility are frequent. In certain cases there is a condition of laxness of fibre of the body as a whole, manifesting itself more especially in certain directions, as a tendency to anemia, cardiac insufficiency, gastric disturbances, and a mild neurasthenia. The body may be large and the muscles strong, so that they are tempted to over-exercise, which leads to over-eating and a taxation of the powers of the stomach which causes dyspepsia. It is difficult to treat such cases, and no general rule can be laid down. In the average case it is better not to take radical measures, such as removal from college, but rather to protect the weak organs by preventing over-exertion in athletic contests, over-study, and depressing surroundings. The boy should not be treated as an invalid, as the tendency to hypochondriasis is great. There is an albuminuria of adolescence due to general debility and disappearing when the cause disappears. In treatment we should not adopt the Spartan method of developing what can be developed and destroying what cannot be developed, nor must we coddle the patient. In schools the pupils should be distributed in small groups, so that the ambition of each may be stimulated by a proper rivalry, but not annihilated by oppression.

Difficulties of Defecation in Infants.—Thomas Charles Martin⁹ explains some of the difficulties of defecation in infants by the imperfect development of the anatomic features concerned in the mechanism of defecation. The infant gut is very deficient in muscular elements, so that the intrinsic power of peristalsis cannot be present in the degree necessary to it as a component factor of defecation. The disproportionately great length of the descending colon and mesentery, moreover, obviously contributes to the possibility of angulation of the gut. The angulations constitute a resistance to the descent of the feces. The third feature obstructive to defecation in infants is the rectal valve. In each and every instance of more than three hundred subjects examined by the author these valves have been present, though in varying number and position in different subjects. In most cases there are present three valves, in some four, and in others but two. The infant specimens shown indicate that the valves are particularly well developed at birth, spanning one-half the diameter of the gut. The bony pelvic outlet in the infant is so contracted that the limits of anal expansion are such as to almost defeat the passage through it of other than fluid feces. Diet, hygroscopic suppositories, and fluid injections which may render more fluid the intestinal contents, will favor their descent through the convoluted gut, the valvulated rectum, and the contracted anus. Massage of the abdomen aids in (1) the development of the auxiliary abdominal muscles of defecation and the intrinsic expulsive muscles of the intestinal wall; further, such manipulations (2) directly propel the gut's contents along the tortuous course of the bowel, and (3) relatively reduce the obstructive features of the valve. If there be an overgrowth of the rectal valve, and if it form an almost impassable barrier to

the descent of the feces, it may be in some measure overcome by dilatation, which may be effected by means of the gently introduced trained finger. The undeveloped condition of the anatomy of the organs of defecation may also give rise to the more or less grave accidents which are peculiarly common to infants—namely, prolapse of the entire rectum and inguinal hernia.

Diphtheria and its Treatment.—Kohler⁴ gives his results in the treatment of hospital cases of diphtheria since the use of the antitoxic serum, and finds a mortality of 17 per cent among 53 cases, including severe, mild, and hopeless cases. He concludes that when the serum is used the entire process is more rapid, especially as regards the disappearance of the membranous exudate, and that there is immediate improvement in severe laryngeal symptoms; nor are nephritis and heart failure seen with any greater frequency than when other forms of treatment are employed. During the year 1896, 49 cases of diphtheria were treated in all, some with and some without serum. Of these 6 died, making a mortality of 12.2 per cent.

Earaches.—Louis J. Lautenbach⁵ urges prompt attention to earaches in infancy and early childhood. Ear pains are dangerous and indicate a condition of inflammation of the middle ear which is necessarily followed by more or less damage to the parts and impairment of the general health. They have a tendency to recurrence and thereby cause nervous and physical exhaustion; they may cause total or considerable loss of hearing with consequent lack of proper mental development; the serious inflammatory complications may terminate in idiocy or epileptiform convulsions; and the weakened condition of the bony structures about the ear may predispose to their serious involvement from slight accidents and to attacks of cerebral disease. The author gives the following aphorisms: Whenever a severe catarrh of the nose in a child occurs, call in the physician. If the attack be a mild one, use protectors, preferably of petroleum ointments, without and about the nose. If the throat is diseased have it treated. If the nostrils are obstructed they should be cleared. If the tonsils are enlarged they should be reduced or removed. Any general derangements present should be recognized and attended to at once. All cases of ear pain should be referred to a physician, and, pending his arrival, sweet oil can be rubbed into the neck and about the ear, or tincture of iodine be painted over the mastoid, or, if the pain is severe, a cantharides plaster can be applied. If the pain continues or is excruciating, syringe the ear gently with hot water or apply a hot-water bag or hot wet cloths, or even hot flaxseed poultices frequently renewed, keeping the head high above the level of the rest of the body. Occasionally ice gives the most relief. If severe pain persists use hot bags at the feet or a hot bath followed by dry heat; sometimes a mustard poultice on the stomach is required in addition. Use cathartics, especially calomel, liberally, and keep the child on a mild diet.

Feeble-Minded, Some Diseases Common to the.—Speaking from an experience of 3,000 cases, Martin W. Barr⁶ says that the major nervous diseases, such as Friedreich's ataxia, syringomyelia, and hydromyelia, are practically unknown. Anterior poliomyelitis is occasionally found, but the most common nervous diseases are the cerebral palsies of childhood. Meningitis is common and confined almost exclusively to boys of the high and middle grades. Hysteria is peculiar to these grades, but occurs more frequently among girls, as do the various neuralgias. True chorea is rare; epilepsy claims about twenty per cent of the feeble-minded, but is seldom seen in the idiot. There is much hereditary predisposition to lung troubles, and, owing to the lack of resisting power, phthisis and pneumonia are inevitably fatal. Asthma, bronchitis, pleurisy, and laryngitis are rare, while tonsillitis, pharyngitis, and rheumatism are common. Cutaneous affections are rare in the high and middle grade imbecile, frequent in the low grade owing to uncleanly habits. Eczema is common. Rupia escharotica, tenia, acne, alopecia, impetigo, herpes, erythema nodosum, and urticaria are among the list of cutaneous diseases. Of acne sebaceum only 20 cases are reported, 3 of which are in the author's list. Ulcers are frequent. Constipation, dysentery, diarrhea, dyspepsia, and gastritis are common. Gastric ulcers are occasionally found among the boys, but never among the girls. Enuresis is common, hemorrhoids, hernia, and prolapse of the rectum common in the higher grades. Deficient circulation is almost exclusively confined to imbeciles of the lower grades. Syphilis is rarer than is generally supposed. Defective vision due to errors of refraction is found among 90 per cent of the high and middle grades, and among the low grades there is much conjunctivitis, iritis, corneal ulcer, and blepharitis. Color-blindness is the exception. Absolute deafness is uncommon even among the members of the idiot class. Both sexes are subject to otorrhea, especially otitis media. Hematoma auris is met with in 25 per cent of boys and is confined almost exclusively to the left ear. Adenoid growths are a fruitful source of speech defects, and their early removal greatly facilitates that training in articulation which holds an important place in all schools for defectives.

Friedreich's Ataxia after an Acute Infectious Disease.—Alexander Katz⁶ reports a case occurring in a girl of 8 years, of excellent family history. At 5 years she had an attack of scarlet fever followed by complete paralysis and inability to speak. In a year she was able to walk with assistance. When seen she was in excellent physical and mental condition, but had a markedly ataxic gait; patellar reflex was absent, as was Romberg's symptom. The disease remained unimproved. Its etiology, mode of onset, and course differentiate it from the hereditary form of Friedreich's ataxia.

Hospitals for Infants, their Scope and Limitations.—L. Emmett Holt⁷ considers that hospitals are necessary as places of research and should be well equipped with pathological,

bacteriological, and, if possible, chemical laboratories, in order to work out in the fullest and best way the problems constantly arising in the treatment of acute illness. This is certainly as important as the experiment stations in the State Agricultural Department to determine the best conditions under which hogs, cattle, fruit, etc., shall be raised. Hospitals are needed, in the second place, for the teaching of physicians and students. One of the greatest deficiencies in the curriculum of the medical schools of the day is the insignificant attention paid to subjects connected with infancy. Thirdly, hospitals are needed for the training of nurses. Fourthly, for the care of such cases as can be better treated in institutions than at home. The author thinks that separate hospitals for infants are better than children's wards in a general hospital; the requirements for infants are very different from those for children, and it is difficult to make hospital boards realize this fact. Young physicians, moreover, do not as a rule realize the value of a knowledge of the diseases of infancy, especially when they see around them the brilliant counter-attractions of surgical work and an acute medical service among adults. Hospital work for infants has its discouraging features: the mortality is very high, the cases brought being very serious ones as a rule, often being brought to the hospital as a last resort. The expense required for care and nursing is very great. The first condition of success in hospitals for infants is a solution of the problem of nutrition, the things affecting it being air space, ventilation and airing, nursing and care, and feeding, all of which must receive special attention. The greatest difficulties in the hospital's treatment of infants are met with in patients under 1 year. After this age the conditions of nutrition are usually not so hard to control. The dangers of "hospitalism" are therefore inversely proportional to the age of the patient. According to the author's experience, the diseases and conditions during the first year which are especially suited to hospital treatment are acute pneumonia, empyema, acute forms of gastro-intestinal diseases, otitis and its complications, ophthalmia, acute surgical cases, and most cases of eczema in children over 6 months old. In all acute diseases it is unwise to retain the infant in the hospital after the acute stage of the disease is past. Chronic nutritive disorders in infants are usually not successfully treated in hospitals. During the second and third years all the diseases enumerated above may be successfully managed, and, in addition, many chronic nutritive disturbances, such as simple malnutrition, chronic indigestion, rickets, scurvy, cretinism, some chronic surgical cases, and, under certain circumstances, some of the contagious diseases, provided the hospital has facilities for their isolation. The author treats of hospital marasmus and of the frequency with which children admitted for simple malnutrition or some slight ailment develop some serious forms of acute disease while in a hospital, especially pneumonia and acute intestinal diseases, drawing the inference that infants

should not be sent to hospitals for minor ailments and kept there a long time; also, the effect of combining sick and well children in the same ward has a most injurious effect upon the latter; and, further, after every form of acute illness, children should be removed as soon as possible from the hospital atmosphere. The ideal infants' hospital is not larger than fifty or sixty beds, provided with every appliance known for the relief of sick infants, and perfect in every hygienic condition. The work must be well done to be of any value to the patients treated or to medical science, and unless circumstances will admit of its being done well it should not be attempted at all.

Indigestion in Infants and Children.—Clarence King^s states that when indigestion is acute the stomach is usually at fault, but when chronic it is usually due to intestinal causes. The treatment of the first form consists, in the first place, of the thorough evacuation of the stomach and intestines. If free emesis has not already occurred ipecac should be given, and followed by calomel or castor oil or other cathartic. As a rule vomiting has occurred, and its persistence is a cause of alarm; in such cases gastric irritation may be allayed by means of a sinapism or spice plaster applied over the stomach, and the administration, at frequent intervals, of small doses of ipecac or a few drops of a mixture of equal parts of lime water and cinnamon water. The child should be kept quiet and food and medicines withheld from the stomach, but if restlessness is prominent an opiate may be given by the rectum, suspended in starch water, and the face and extremities may be frequently sponged with tepid water. In older children diarrhea is more common than vomiting, and should be treated by laxatives, stimulants, and occasionally by digestants. The treatment of chronic indigestion must begin with radical changes in the matter of food and feeding. Infants at the breast should be nursed regularly at intervals, varying during the day from an hour and a half to three hours, according to age, but at night not more than half as often. If there is reason to suspect that the breast milk is the cause of the indigestion, cow's milk properly diluted should be substituted. The bowels should be attended to and constipation removed, which is not easy. Calomel in doses of from one-twentieth to one-tenth grain, four to six times a day, serves both as a laxative and as an antiseptic, but it should be discontinued for a few days at least every fortnight. Hydriatics and massage of the abdomen may be of service in some cases; and occasionally hot-water injections may be given, but not as a matter of habit. Personal hygiene and sanitary surroundings should be attended to, and the children should have plenty of fresh air. Diastase, pancreatin, or pepsin may be given as aids to digestion, the author's preference being for the first two. He has found that pepsin and pancreatin combined, although an unscientific combination, gives better results than either medicine administered separately. Hydrochloric acid is sometimes useful in older children, but should seldom be given to infants. He does not

recommend predigested foods. *Nux vomica* or *strychnia* should be employed in appropriate doses, and the artificial digestants be gradually reduced and withdrawn.

Intussusception of the Ileum.—Stubenrauch⁹ reports the case of a girl $5\frac{1}{2}$ years old who was attacked suddenly with colic, tenesmus, bloody mucous stools, and tympanites. A tumor was felt in the median line of the abdomen, and laparotomy was done. The intussusception was found in the ileum, and was impossible of reduction because of the gangrenous condition of the gut. Resection was practised, but death followed in collapse. The intussusception resulted from invagination of Meckel's diverticulum and is interesting on that account.

Measles, School-Hygienic Reforms in.—Widowitz¹⁰ has observed cases undoubtedly infected in school, and recommends that the school class in which a case of measles has appeared should be closed from the ninth to the fourteenth day after the first case became known. Any cases developing during this time must be isolated and carefully observed. All children belonging to such a class should be kept by the parents from associating with other children during these five days. Should an epidemic of measles appear these precautions are useless. Children living in the same house with measles patients may attend school, provided they bring a certificate from the family physician or from the health board stating that they have had an attack of measles.

Meningitis.—Walker Overend¹¹ and W. Foster Cross¹¹ report a case of chronic infantile meningitis in a child of 10 months. Interest attaches to the rigidity, which was extreme. The fingers were clenched, with the thumbs turned inward, the forearms prone, and the arms extended. The legs were extended to such a degree that the feet touched the pillow and were on the same level as the retracted head. The tibiae were rotated outward and the knee joints were rigid. The feet were extended and rotated inward; the great toes were drawn inward toward the sole. An attempt was made to drain the lateral ventricles through the subcerebellar space. The child bore the operation well, and some improvement followed, temperature becoming normal and rigidity less. But the child became steadily weaker and died on the twenty-third day after the operation. To be of use, the operation, which is not difficult nor attended by any special risk, should be performed as soon as the measurements of the head begin to increase; otherwise the lateral ventricles become dilated beyond any hope of amelioration.

Ophthalmia Neonatorum.—Norburne B. Jenkins¹² suggests an emulsion and a method for the treatment of purulent ophthalmia and ophthalmia neonatorum. The usual applications, he says, in many instances work more injury to the eye and its appendages than the diseases which they are supposed to relieve. The emulsion which he recommends is the following:

R Argenti nitratis.....	gr. v.-x.
Acaciæ.....	3 j. (or q. s.)
Aquæ destillatæ.....	ss.
Petrolati liquidi.....	ss.

M. Make emulsion and put it into a wide-mouth two-ounce bottle. Shake well before using.

In the initial stage of blennorrhœa the customary treatment—*i.e.*, iced compresses, Leiter's tubes, leeching, cleansing with bichloride solutions, etc.—is to be followed. When suppuration is established the patient is placed on his back, the lids everted, the eye thoroughly cleansed with a sterilized 1:5000 solution of corrosive sublimate or permanganate of potassium, the wash to be as hot as can be borne. While the lids are still everted an assistant drops two or more minims of the emulsion into the eye. The surgeon then for about thirty seconds manipulates the lids in such a manner that the emulsion may penetrate to the utmost recesses of the folds of transition of the conjunctiva. Care must be used not to injure the conjunctiva. The emulsion at first should be used every twelve or twenty-four hours, then every twenty-four, forty-eight, or sixty hours until all discharge ceases; in the interim any purulent discharge to be washed away by the bichloride solution. A discharge altered by the presence of the preparation must not be mistaken for pus. This emulsion is offered as a substitute for the aqueous solution in the Credé method in the prophylactic treatment of the eyes of the new-born.

Pneumonia following Measles.—Ivan Honl,¹³ as the result of extensive observations upon the subject, concludes that: 1. The most frequent cause of death in measles is not tuberculosis, but pulmonary inflammation. 2. In simple measles or in measles complicated by pertussis various forms of pneumonia may be found. In the affected areas various bacteria are found—streptococci, staphylococci, pneumococci, pneumobacilli, the bacilli of diphtheria, and pyocyanic bacilli—but these cannot be regarded as the specific agents of measles. 3. An injection of the sputum of measles patients into the veins of rabbits which are not entirely immune to the pneumococcus, causes a pneumonia which has every appearance of caseous pneumonia, but in which no tuberculous bacilli are to be found. 4. There is a pneumonia following measles which is characterized by a process of suppuration and proliferation and by the presence of giant cells. The existence of these giant cells must be attributed to defective resorption of the exudate due to emphysema and to functional weakness of the parenchyma of the lungs. The exudate and the microbes which remain in the affected areas act as foreign bodies and irritate the lung tissue, causing the characteristic inflammatory process. This pneumonia is not due to any one etiological agent. Tuberculous lesions have sometimes been found, but in many cases there has not been the slightest trace. We must therefore either admit that caseous pneumonia may exist which is not caused by the tubercle bacillus, or hold that the

form of pneumonia studied is special to measles or pseudo-caseous.

Pyloric Stenosis in the Nursling, and its Surgical Treatment.—Stern¹⁶ reviews the literature in detail, having found ten cases reported with autopsy and two without. His own case was that of a baby 5 weeks old, which never had good stools, but remained for days without any movement from the bowels, and only passed very small quantities after clysters or suppositories. Vomiting began, although the child was breast-fed. No bile was found in the vomit, but was present in the stools. Consequently an obstruction above the opening of the ductus communis choledochus was diagnosed. Laparotomy was performed and the pylorus stitched to a loop of small intestine. Six hours later the baby had a spontaneous stool, but collapsed and died the same night. The autopsy showed that the pyloric stenosis was due to a tumor two by four by one centimetre, covered by gastric mucous membrane, and microscopically composed of hypertrophied stomach wall, especially the circular muscle coat.

Relapsing Measles.—Kain¹⁶ has observed a case of measles where the relapse followed a few days after the first attack, and the eruption was as widespread and well marked as the first one; the catarrhal symptoms were also as decided and the temperature as high— 39.6° to 40° C. There were other cases in the family.

Rheumatism, Acute Articular Nodular.—Albert Delcourt¹⁴ reports a case of this affection, which, he says, is rare in childhood. He believes that heredity and temperament have much to do with the etiology of the affection. The onset, as a rule, is slow and insidious, indicated only by vague pains in the joints and the muscles. By degrees the small articulations (hands and feet) become the seat of marked swelling, which may disappear and reappear several times before it becomes permanent. The other articulations (knee, elbow, shoulder, and vertebral column in the cervical region) gradually become involved. Even in the early stages some difficulty is experienced in moving the affected joints; this difficulty increases until the child is scarcely able to sit or stand; its general health deteriorates, muscular atrophy progresses with rapidity, and the limbs become skeleton-like. In establishing a diagnosis we must bear in mind the fact that arthritis frequently occurs during or after certain infectious diseases, as diphtheria, erysipelas, gonorrhea, mumps, syphilis, typhoid fever, cerebro-spinal meningitis, glanders, anthrax, scarlatina, measles, small-pox, pneumonia, and chicken-pox. Trophic arthropathies have been known in nervous diseases, as tabes and syringomyelia, also in hysteria, infantile paralysis, myelitis, muscular atrophy, myelopathie, and multiple sclerosis. They occur also in cases of white swelling, but the course of the disease will clear the diagnosis. Gout has, though rarely, been found in children as young as 6 years. Bouchard's nodes (transverse swelling of the phalango-phalangeal articulation, especially at the extremity

of the middle phalanx) may cause perplexity, but the deformity never becomes as great as in chronic rheumatism and is limited to the second articulation of the fingers. It is accompanied by dilatation of the stomach and a special condition of the digestive tract. Heberden's nodes do not exist in childhood. The X-rays may render good service in the diagnosis.

As in acute rheumatism, the complications of chronic rheumatism are usually seated in the serous membranes. The heart is usually involved. Pericarditis and chronic pleurisy are to be feared.

Treatment does not often prevent the fatal progress of the disease. All authorities, however, agree in saying that the patient must be removed from the conditions under which the affection was contracted and must be given air, light, hygienic surroundings, and nourishing food. Hospital life is contraindicated. During acute attacks the child must be kept in bed and applications made to the painful joints. The salicylate of soda, arsenic, tincture of iodine (ten drops a day) appear to cause some improvement. Jules Simon uses tincture of colchicum (four to ten drops a day), while Laborde prefers antipyrin. To soothe the pain an ointment of the salicylate of methyl may be rubbed on the joints, which are then carefully enveloped. The author has not had good results from sulphur baths. Galvanism is recommended by some authors, and may be complemented by massage to produce resorption of the periarticular infiltrations and contribute to the invigoration of the muscular and other tissues involved in the disease.

Sarcoma of the Kidney.—G. H. Grant¹⁷ reports a case, in a little girl of 6 years, of this disease, which is so extremely rare in childhood. Its origin is not yet understood. Trauma, heredity, the exanthemata, local irritation of pressure, cancer or inclusion-cell genesis have been considered and a parasitic origin has been invoked. The character of the elements of these kidney tumors is such that their embryonic origin seems indisputable. If the disease originate in the pelvis of the kidney, hemorrhage is likely to occur as the invasion proceeds, albuminuria being an earlier symptom of involvement of the tubules. When the disease originates in the cortex, probably neither symptom will be observed. In the majority of cases urinary symptoms are absent until tumor pressure on the bladder causes frequent micturition. As to the diagnosis, kidney tumors spring from the flank; are dull posteriorly; are resonant in front over the colon; have a sulcus between them and the liver or spleen; and when large are most prominent in the lower zone of the abdomen. Their position is unchanged by deep inspiration. Urinalysis assists the diagnosis in some cases, but not as a rule. Sarcoma of the kidney progresses to a fatal termination in children in from three to twelve months. The disease is uninfluenced by medicine. Surgical interference is less favorable in its results for children than for adults. the great majority of those who survive the operation dying from recurrence.

Syphilis, the Medicinal Treatment of Congenital Infantile.—Charles S. Shaw³ says that in the infant we have, as a rule, the secondary stage to treat, the initial lesion never, the tertiary stage rarely, because the child, owing to its slight resisting powers, usually dies of malnutrition before that stage is reached. The treatment which will best succeed in an infant is that which will disturb nutrition the least, for well-nourished children with a severe form of the disease will steadily improve where badly-nourished children with a seemingly less virulent form will die. Mercury, in infancy, is the only drug. The usual method of administering it—by the mouth—is contraindicated in infants by the digestive disturbances that so frequently follow the internal use of mercury in them. The hypodermatic method is objectionable because of the pain and of the possible abscess that attend its use. The troublesomeness of the vapor bath is greater in infants than it is in adults, and the danger of mercurial poisoning is not less. There remains the method of cutaneous inunction. Its advantages are certainty and rapidity of action and control; the disadvantages of uncleanness and inconvenience disappear in infancy. The liability to cutaneous irritation can be completely removed by a little care. The eligible preparations are the unguentum hydrargyrum of the Pharmacopeia and the official ten per cent oleate of mercury. These should be diluted with an equal quantity of lanolin, lard, or vaselin. Spread about one drachm of the ointment on a small piece of cotton or flannel cloth and lay it on the child's abdomen, covering it with a binder; every second day bathe the child and reapply the ointment. The warmth of the child's body, the gentle friction produced by its movements, and the activity of its cutaneous circulation will all contribute to the speedy absorption of the medicament.

Tannoform as an Antidiarrhoicum.—Dworetzky¹⁸ has found tannoform much more valuable in cases of diarrhea in adults than in similar cases in children. In 5 cases no result whatever was obtained, calomel and opiates having to be called into requisition; in 9 other cases the drug worked well, but in 3 cases it caused vomiting. Nevertheless it is to be recommended as a valuable intestinal antiseptic.

Tetany in Infancy.—John Lovett Morse³ reports 6 cases and discusses the disease. He gives the various theories which have been advanced in regard to its etiology, and says that the most recent, and perhaps the most plausible, theory assumes that there is no single pathologic cause for tetany, but that, like epilepsy, it may arise from many causes. Like epilepsy, too, it must be regarded merely as a nosologic entity and not as a definite disease. In improper hygienic surroundings, in rickets, in gastro-intestinal disorders, in acute disease, and in various intoxications are present conditions capable of causing the formation of various toxic substances. The action of all these poisonous substances may show itself by a special modification, rather functional than organic, of the central or peripheral nervous system. The various lesions of the nervous

system found in tetany are not inconsistent with this conception. There can be no specific treatment of tetany; but, as what evidence there is seems to show that the disease is due to toxic poisoning of some sort, treatment may be directed to the prevention of the formation of toxic substances, and to their elimination if already formed. Regulation of the diet is probably the most important method of preventive treatment. Intestinal antiseptics may also be of use. Hygienic surroundings, fresh air, and sunlight are essential. Emetics, purgatives, and lavage of the stomach and colon tend to favor elimination and to prevent absorption of toxic substances already formed. The kidneys must be kept active by a liberal supply of water and possibly by mild diuretics. The skin may be stimulated by proper hygienic methods. Symptomatic treatment is important, and consists largely in the avoidance of excitants of spasm and in the employment of antispasmodics. Excitants to be avoided are cold, handling, noise, and excitement. Antispasmodic treatment may be local, by the use of such measures as warmth, warm baths, inunctions of oil, and light massage; or general, by drugs. The bromides and chloral are the most useful, but opium, belladonna, valerian, and musk may be tried. During convulsions chloroform or ether may be administered by inhalation.

Toxicity of the Urine, and its Modifications during the Course of Scarlatina.—Marc Mazaud¹⁹ thus sums up an exhaustive study of the subject: 1. Pure urine is used for the purposes of research and injected into the veins. 2. In scarlatina the urine of the febrile period has a high relative toxicity. If at all abundant, the absolute toxicity is above the normal. 3. Febrile urine causes convulsions. When it contains albumin, not only does it cause convulsions, but the intestines are subjected to very active movements, followed by diarrhea, which is sometimes bloody. 4. Febrile urine frequently induces lacrymation and salivation. The sialagogue power is increased by heat. 5. At the moment when the temperature becomes lowered there is a urotoxic crisis of short duration. 6. In the period coinciding with the onset of the crisis the urine is convulsive in its effects; in a later stage it is narcotic and causes dyspnea. 7. After the crisis, during convalescence, the urine becomes hypotoxic and remains so for a long time. 8. The changes in toxic power observed during the course of the disease are not related to changes in nourishment.

Tuberculosis, Infantile.—Louis Fischer⁶ says that in the treatment of this disease no drug used has ever been found so efficacious as cod-liver oil and creosote. The former he gives in a twenty-five per cent emulsion, and, if the stomach tolerates it, he increases gradually to a fifty per cent emulsion; gives the pure cod-liver oil a teaspoonful three times a day to a child under 5 years of age. If the stomach does not tolerate it he gives it in the form of an inunction. He has the child's body sponged with soap and water and thoroughly dried with a coarse Turkish towel, and then has the oil rubbed in, chiefly over the chest

and abdomen, for five or ten minutes every morning. In this manner an ounce of the oil may be absorbed into the circulation. The creosote carbonate is the best form in which to administer the drug. Give a drop for each year until ten drops three times a day are given. A marked increase in the appetite usually follows, and a decided improvement in the cough, if any is present. If necessary, alcohol should be used, but cautiously. No medicine can equal fresh air and exercise and sunshine and cleanliness.

Tuberculosis in Public Schools.—Many of our schools as now conducted, says J. M. Emmert,¹⁷ are veritable "Black Holes" where the children are dying of autointoxication. They do not succumb at once, because they receive enough oxygen into their lungs to partially feed the tissues, keeping up a feeble existence for years. The effect of breathing vitiated and devitalized air is to lower the vital standard; the tissues are starved; phagocytic life is weakened, thereby lessening the resistance to microbic invasion. The child suffers with malaise, lassitude, headaches; grows pale, emaciated, and debilitated. He ceases to play because he is too tired; he does not eat because there is not life enough to get up an appetite. There could not be a better culture bed for tubercular germs, a richer and more prolific soil to grow the tubercular bacilli. The high-pressure system also prepares the way for the disease by the over-stimulation of certain organs at the expense of other organs, which become weakened and are thus vulnerable points for pathogenic germs. Another important matter is the effect of study and of the admission of light upon the eyes. In this country as high as 30 per cent have been found with some form of eye trouble. The effect of affections of the eye upon the nervous system is very great, the whole system becoming involved and deteriorating. A child of this kind is a prominent candidate for tuberculosis, made such because the light is admitted into the school room in an unscientific manner, or because he is compelled to work at a shining blackboard where the glaring rays of the sun are reflected directly into his eyes, producing a retinal irritation which, acting as a reflex, sets in motion a chain of nervous symptoms. We know that every case of tuberculosis comes from man or beast and does not arise spontaneously. A large per cent of the human family may inhale and eat the germs with impunity, because the vital standard is high, the resistance normal, the health good. Very different is the man, woman, or child who has disobeyed all physiological and psychological laws by overwork mental or physical, compelled to breathe damp, devitalized, or vitiated air. The vitality is low, the mucous membrane pale, irritated, and in a catarrhal condition, the digestive organs are weakened, digestion and assimilation are abnormal, the excretory organs only half do their work. This is the class of people from which the tubercular army secures recruits; and every school that crowds fifty or sixty pupils into a room which was intended for only thirty is a recruiting station. Statutory laws

should be enacted, with heavy penalty for violation, requiring school officials to supply each scholar with not less than twenty-five square feet of floor space and not less than one thousand cubic feet of fresh air per hour, to have the windows in the room so adjusted that the light will be admitted from the rear of the pupil, to prohibit persons who have tuberculosis from teaching, and to prevent scholars with the same disease from attending school. The grading of the schools should be revolutionized and a method adopted which would render it unnecessary to break down a pupil's health in order that he may keep up with his class. The floors and woodwork should be washed with some germicide solution every evening, and the walls washed down with the same solution at least once a month; all windows and doors thrown open as soon as scholars are dismissed, and left open for several hours, irrespective of weather. Our schools should be put upon a sanitary basis. If this were done we should hear less about invalidism among school children and the per cent of mortality from tuberculosis would be lowered.

Water in the Treatment of the Gastro-enteritis of Nursing Infants.—M. Marfan²⁰ has for several years obtained the most satisfactory results in this disease by the use of boiled water. He does not neglect other medication, but he considers this to be the fundamental part of the treatment. The digestive troubles of nursing infants may roughly be divided into: 1. Specific gastro-enteritis, or at least forms distinguished by some special characteristic. 2. Ordinary gastro-enteritis. Under the first we may include Asiatic cholera, dysentery, typhoid fever, tuberculosis and syphilis of the digestive tract, melena of the newly-born, and the follicular or dysenteriform gastro-enteritis which M. Escherich and his pupils believe to be due to the streptococcus. The ordinary gastro-enteritis may be acute or chronic. The former is light or severe. The chronic form is characterized, first, by attacks of diarrhea and vomiting, separated by intervals of rest, during which the infant is sometimes constipated; second, by the formation of a large, flabby abdomen which corresponds to elongation of the intestines. It is in infantile cholera, the most severe acute form of the disease, that the effects of a water diet are the most remarkable. The author thinks it strange that so simple and efficacious a remedy has not been systematically tried long before this, but supposes the reason to be that so many consider that a nursing child does not well support the absence of nourishment. In point of fact, what it does not support is the absence of water rather than that of milk. At an early age a diminution in the fluids of the body is more injurious than at a later age. Nursing infants succumb in a few hours to excessive diarrhea, and a purgative administered before the age of 2 years may induce fatal diarrhea. The diet, then, should be regulated by this rule: *The amount of milk withheld must be replaced by at least an equal amount of boiled water.* The milk must be stopped, or the vomiting and the diarrhea

will increase. Pure water alone is well tolerated. *The chief effect of the water diet is to suppress gastro-intestinal putrefactions.* The water should be boiled for several minutes and be kept in the same vessel in which it is boiled. It may be given cold in a nursing bottle or in a glass cleaned with boiled water. The child may take about as much as it wants. It may be given fifty grammes (one and one-third ounces) every half-hour, one hundred grammes (three and one-third ounces) every hour, one hundred and fifty grammes (five ounces) every hour and a half or every two hours, according to indications. At first nothing at all must be added to the water. After a few hours, especially if the child is reluctant to take it, a little sugar may be added. Albumen must not be added, as it putrefies so easily that it is liable to aggravate the disease. There is no special advantage in giving the water either hot or iced. This treatment should last at least twenty-four hours. If the vomiting has ceased and the diarrhea is almost completely checked, the facies more natural, the temperature nearly normal, the infant may be given a little nourishment every four hours—either a short nursing or forty grammes of sterilized milk with an equal amount of sugared water (ten per cent), while the boiled water is administered as usual. But if improvement is less marked the water diet should be persisted in for twelve or twenty-four hours longer.

The water diet is followed, as a rule, by prompt disappearance of the vomiting and diarrhea, but this does not always mean recovery. In some cases the treatment may have been postponed so long that the organism has become impregnated with the microbes. Hypodermatic injections of a saline solution in addition to the water diet have often caused a cure. Hot baths, 35° to 36° C. (95° to 96.8° F.), lasting from five to ten minutes, given from two to four times a day, calm the nervous system, regulate the temperature, exercise a revulsive action upon the skin, and favor diuresis.

In ordinary acute light attacks of gastro-enteritis the water diet should be given as in cholera, but, as a rule, it need not be so long continued. According to the severity of the attack, it may last for from six to eighteen hours. A water diet is also the best form of treatment for vomiting of gastric origin in nursing infants. In slight gastro-enteritis with fetid stools the author gives small doses of calomel—one centigramme (one-sixth of a grain) divided into five parts and given every half-hour. This he does not give unless the child is at least three months old. If the diarrhea persists he gives the following:

Calumba root.....	1 gr.-15 gr.
Boiling water.....	100 " - 3½ 3.
Subnitrate of bismuth.....	4 " - 13.
Syrup of orange flower.....	20 " - 55.

A teaspoonful before each nursing.

He also washes out the intestines with hot boiled water.

Chronic diarrhea, non-intermittent and lasting several weeks, indicates intestinal ulceration. In these cases we must not expect the same good results from a water diet that we obtain in other forms of gastro-enteritis. Still, it may diminish gastro-intestinal fermentation.

There are no contraindications to the water diet, but in weak or cachectic infants it should not last more than eight to ten hours.

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 ERRATUM.

PITTSBURG, PA., November 22, 1898.

To the Editor of The American Journal of Obstetrics.

DEAR DOCTOR:—Will you kindly correct a statement attributed to me in the discussion at the meeting of the American Association of Obstetricians and Gynecologists held in Pittsburg, September 20 to 22 of this year, which is misleading and not according to facts? In speaking of the operative treatment of ectopic gestation with living child, I was quoted as saying, on page 756 in the last issue of your JOURNAL, "that he had had one successful case in which he left the placenta and removed the sac, with the exception of a small portion which he stitched into the abdomen"; and again, "he had not enucleated the placenta, but simply the sac containing the placenta."

It should read: "That he had one successful case in which he removed the placenta with the sac, with the exception of a small portion," etc.; and again, "he had not enucleated the placenta by itself, but with the sac containing it."

Very sincerely yours,

X. O. WERDER.

INDEX.

A

	PAGE
Abdomen, relaxed, and its evil consequences. Illoyay.....	331
Abortion, criminal. Winter.....	85, 101
danger of curettement after.....	898
missed	890
Abscess, retropharyngeal, in children.	301
tubo-ovarian, and pyohematic accumulation in tube and ovary of other side.....	572
Absence of uterus and vagina, with sarcoma of one ovary and adeno- carcinoma of the other. Ladinski.....	78
Acker. Acute fibrino-purulent peritonitis in infants.....	248, 265
Adenoma of the breast. Balloch.....	542, 564
Adherent uteri, treatment through the posterior vaginal cul-de-sac. Smith.....	106
Adnexa and uterus. surgery of, per vaginam. Wathen.....	51
Albuminuria as a lithemic manifestation in early life.....	600
complicating gynecological operations. Hall.....	678, 768
Alcohol as a disinfectant.....	287
Alexander operation, points in the technique of. Hayd.....	665
operation without buried sutures.....	904
Alopecia. congenital.....	774
Amenorrhea, functional, senecio in.....	286
primitive. Chase.....	512, 517
Ammonium salts, influence on urea excretion	303
Anesthesia, general, by Schleich mixtures. Garrigues.....	274
Antistreptococcic serum treatment, committee on, of American Gyne- cological Society.....	426
Antitoxin and intubation	144
diphtheria, as an immunizing agent.....	293
Appendages, uterine, conservative operations upon. Dudley.....	407
Appendicitis and chronic tubo-ovarian disease Bowen	92
and other abdominal inflammations, intestinal drainage in. Pond.....	829
complicating the pregnant and puerperal states Marx..	199
Asdale. Extrauterine pregnancy; mature fetus; skeletal remains born seventeen years over completion of gestation term; condition eventually complicated by ovarian cyst, which resulted fatally...	748
Ataxia, acute, in childhood.	292
Atherton. Retroversion of the pregnant uterus.....	555
Atresia, congenital intestinal.....	913

B

Bacillus diphtheriæ and its variants.....	136
typhosus in the uterus in a case of puerperal infection. Dob- bin.....	185
Bacteria in vaginal secretion of the pregnant woman. Williams.....	807
of the vagina and their practical significance. Williams, 390, 449	
Baldy. Abdominal section some three months after vaginal section..	825
Ovarian cyst protruding through the inguinal canal.....	827
and Wells. Recurrent vulvar growth.....	370, 383, 553
and Williams. Primary carcinoma of the fundus uteri...345, 388	
Balloch. Adenoma of the breast	542, 564

	PAGE
Beyea. Chronic inflammatory hyperplasias of the ovary.....	315
Bile pigment in urine in icterus neonatorum.....	292
Biliary tubercles and cavities in the child.....	913
Bladder, ectopia of, in children.....	600
enormously dilated.....	288
methods for removal of hairpins from female. Currier...416,	908
Blood-letting, local and general, in pediatrics..	136
Blume. Complications following vaginal hysterio-salpingo-oöphorec- tomy in pelvic suppuration.....	657, 737
Double uterus and vagina; pregnancy in one horn; excision by vaginal section.....	772
Boise. Post-operative saline infusions.....	419
Boldt. Porro operation versus total hysterectomy.....	41, 272
Bovée. Large fibroid of the uterus.....	572
Ovarian hemorrhage.....	264
Ovarian papillomato-fibro-adeno-cystoma.....	879
Patency of the stump after salpingectomy.....	57, 408, 565
Sarcoma of the uterus.....	568
Tubo-ovarian abscess, and pyohematic accumulation in tube and ovary of other side ..	572
Bowen. Chronic tubo-ovarian disease and appendicitis.....	92
Ventral hernia.....	547, 558
Breast, adenoma of the. Balloch.....	542, 564
tuberculosis of the. Smith.....	840
cancer of.....	288
Broad ligament, fibroma of. Da Costa.....	375, 387
surgical treatment of morbid conditions involving the. Clarke.....	688
Bromoform poisoning in children.....	775
Broncho-pneumonia in children ..	136
Byford. Improvement in the technique of the after-treatment of peritoneal section.....	18
C	
Calot's method of reducing a kyphos.....	292
Cameron. Floating kidney.....	704
Cancer.....	906
of breast.....	288
Carcinoma developed from the wall of a dermoid cyst of the ovary. Clark.....	305
primary, of the fundus uteri. Baldy and Williams...345,	388
uteri and diabetes mellitus. Kreutzmann.....	846
Cardiac diagnosis in pediatrics.....	600
Carr. Symphyseotomy.....	535, 562
Carstens. Removal of the cecum	720
Rupture of the body of the uterus during confinement....	852
Castration for rudimentary uterus, absence of vagina, menstrual mo- limina. Vineberg.....	500
Catarrh, senile uterine.....	287
Catgut, sterilization.....	287
Cecum, removal of the. Carstens.....	720
Celiotomy done under "infiltration anesthesia" of Schleich. Stro- bell.....	550
Cervix, congenital lacerations.....	287
treatment of granular erosion of, by ligation of the cervical vessels. Gilliam.....	757
Cesarean section.....	280
Chase. Primitive amenorrhea.....	512, 751
Child-bearing, uremia in. Lewis	217
Children, indigestion in.	918
Cholelithiasis in infancy and childhood.....	600
Cholera infantum.....	601
Chorion, epithelioma of the.....	906

	PAGE
Chorionic epithelium, malignant growths of, and their relation to the normal histology of the placenta. Gaylord.....	145, 258
Clark. Carcinoma developed from the wall of a dermoid cyst of the ovary.....	305
Clarke. Surgical treatment of morbid conditions involving the broad ligaments.....	688
Constipation in childhood, treatment.....	293, 775
habitual, in infancy.....	138
Convulsions in children.....	140
Cragin. Congenital pelvic kidneys obstructing the parturient canal.....	36, 104
Criminal abortion. Winter.....	85, 101
Cumston. Septic infection of ovarian cystoma.....	630
Curettement after abortion, danger of.....	898
Currier. Methods for removal of hairpins from female bladder.....	416, 908
Removal by abdominal incision of remains of extrauterine fetation of fourteen months' duration.....	415
Cushing. Choice of methods in hysterectomy.....	395
Cyst, dermoid, of the ovary.....	288
ovarian, protruding through the inguinal canal. Baldy.....	827
Cystoma, septic infection of ovarian. Cumston.....	630
technique for intraligamentous ovarian. Gilliam.....	517, 742
Cysts, intraligamentous, improved technique in operation for. Hall.....	752
vaginal.....	432

D

Da Costa. Fibroma of the broad ligament.....	375, 387
Daland. Pulmonary embolism following hysterectomy.....	383
Deaf, training of.....	434
Deaver. Peritonitis—cause, twisted ovarian pedicle.....	832
Debility of adolescence.....	913
“Deci-normal” salt solution. Gaynor.....	258
Deformity, congenital.....	140
De Lee. Rupture of the symphysis pubis during labor.....	483
Delirium, periodical menstrual.....	898
Diabetes mellitus and carcinoma uteri. Kreutzmann.....	846
Dicephalus dibrachius.....	432
Dickinson. Combined Trendelenburg-Walcher posture in obstetric operating.....	791
Diphtheria antitoxin as an immunizing agent.....	293
and its treatment.....	915
of the vulva.....	294
of the vulva. Williams.....	180
relation of status lymphaticus to.....	140
serum therapy and death in.....	301, 775
stricture of esophagus following.....	301
Dobbin. Puerperal infection with bacillus typhosus in uterus.....	185
Double uterus and vagina; pregnancy in one horn; excision by vaginal section. Blume.....	772
Drainage, intestinal, in appendicitis and other abdominal inflammations. Pond.....	829
post-operative abdominal.....	905
Ducts, gall, injuries of the. Porter.....	693
Dudley. Conservative operations upon the uterine appendages.....	407
Dunn (B.S.). Relation of the female generative organs to nervous and mental affections.....	760
Dunn (J. C.) Insufficient menstruation.....	715

E

Earache in children.....	602, 915
Eclampsia and extrauterine pregnancy.....	431
puerperal.....	431

	PAGE
Electricity as a useful therapeutic agent in gynecology.....	296
Electro cautery, searing the pedicle with. Skene.....	408
Embolism air, following placenta previa.....	430
pulmonary, following hysterectomy. Daland.....	382
Emmet's operation for lacerated perineum and relaxed vaginal outlet.	
Stone.....	524, 573
Emphysema, subperitoneal, after rupture of uterus.....	285
Empyema in children.....	603
Endocarditis in childhood cured.....	142
treatment of. Sellman.....	728
Endothelioma lymphangiomatodes of the cervix uteri. Robb.....	418
Erosion of the cervix, granular, treatment by ligation of the cervical vessels. Gilliam.....	757
Eruptions, hysterical. Tompkins.....	362, 389
Erysipelas of new-born with marked gangrene.....	294
Esophagus, stricture of, following diphtheria.....	301
Examination, bacteriological, of uterine contents in forty cases of fever in the puerperium. Williams.....	323
Exanthemata as a factor in producing pelvic disorders Hyde.....	648
Exploration, external, in obstetrics.....	773
Extrauterine fetation of fourteen years' duration, removal by abdominal incision. Currier.....	415
pregnancy; mature fetus; skeletal remains born seventeen years over completion of gestation term; condition eventually complicated by ovarian cyst, which resulted fatally. Asdale.....	748

F

Fallopian tube, papilloma of.....	908
Feeble-minded some diseases common to.....	916
Fever, puerperal, treatment of.....	430
Fibroid of the uterus Bovée.....	572
of uterus undergoing degeneration. Stone.....	557
Fibroids, thyroid extract for. Mosely.....	400
uterine, facts in regard to. Ingraham.....	684
uterine, mammary gland for. Shober.....	355, 382, 400
uterine, treatment of, by the general practitioner. Vander Veer.....	731
uterine, and pregnancy.....	907
Fibroma of the broad ligament. Da Costa.....	375, 387
First hour with mother and new-born baby.....	775
Foundlings in Russia, care of.....	142
Friedreich's ataxia after acute infectious disease.....	916
Fry. Streptococcic infection in childbirth, serum therapy in.....	423

G

Gall ducts, injuries of the. Porter.....	693
Garceau's cystoscope. Kelly.....	736
Garrigues. General anesthesia, especially by the Schleich mixtures...	274
Gastro-enteritis, acute, of children.....	294
Gastro-enterostomy by a modified Von Hacker method. Thomas.....	708
Gastro-intestinal infection, acute, in infants.....	599
Gaylord. Malignant growths of the chorionic epithelium, and their relation to the normal histology of the placenta.....	145, 258
Gaynor. "Deci-normal" salt solution.....	258
Generative organs female, relation to nervous and mental affections.	
Dunn.....	760
Gestation, ectopic.....	905
ectopic, occurring twice in same patient. Ross.....	850
ectopic, associated with primary tuberculosis of the Fallopian tube. Shober.....	836
Gilliam. Operative technique for intraligamentous ovarian cystoma,	
	517, 742

Gilliam. Treatment of granular erosion of the cervix by ligation of the cervical vessels	757
Gordon. Suture and ligature material—absorbable or non-absorbable?	403
Grippe in relation to pregnancy	891
Gynecological operations, albuminuria complicating. Hall	678, 768
Gynecology, electricity as a useful therapeutic agent in	266

H

Hairpins from female bladder, methods for removal of. Currier	416, 908
Hall. Albuminuria complicating gynecological operations.....	678, 768
Improved technique in operation for intraligamentous cysts...	752
Hamilton. Modified milk	253
Hammond. Résumé of one thousand cases of labor	855
Hayd. Points in the technique of the Alexander operation.....	665
Head, measurement of fetal.....	892
Heart disease, congenital.....	143
Hemiplegia, hereditary infantile.....	776
Hemophilia in the new-born.....	435
Hemorrhage, accidental	894
ovarian. Bovée.....	264
postpartum.....	893
Hernia, ventral. Bowen	547, 558
Heterotaxia of internal organs in children.....	604
Hip, congenital dislocation of.....	140
Hobbs. Surgical treatment of patients at the Asylum for Insane, London, Ont	170
Howitt. Surgical treatment of intussusception in the infant.....	617, 743
Humiston. Graver nerve disturbances due to changes in the genital organs.....	710, 761
Hyde. Exanthemata as a factor in producing pelvic disorders.....	648
Hydorrhea, fetid, with small uterine fibromata	907
Hyponomoderma.....	435
Hyperplasias of the vulva, chronic inflammatory. Beyea.....	315
Hysterectomy, choice of methods in. Cushing.....	395
mania following. Stone.....	560
pulmonary embolism following. Daland	382
total, Porro operation versus. Boldt.....	41, 272
vaginal, for procidentia. Johnson	568
Hysterical eructations. Tompkins.....	363, 389
Hystero-salpingo-oöphorectomy in pelvic suppuration, complications following vaginal. Blume.....	657, 737

I

Icterus neonatorum, bile pigment in urine.....	292
Idiocy.	295
amaurotic family	604
Illoway. Relaxed abdomen and its evil consequences.....	331
Incision, abdominal, removal of remains of extrauterine fetation of fourteen months' duration. Currier	415
Indigestion, chronic intestinal, in children.....	138
Infant feeding.....	606
intussusception in the, surgical treatment of. Howitt.....	617, 743
Infants, acute fibrino-purulent peritonitis in. Acker.....	248, 265
difficulties of defecation in.....	914
hospitals for	916
indigestion in.	918
Infection, puerperal	893
puerperal, with bacillus typhosus in uterus. Dobbin.....	185
"Infiltration anesthesia" of Schleich, celiotomy done under. Strob- bell.....	550
Inflammation, pelvic, surgery of.....	900

	PAGE
Infusions, post-operative saline. Boise.....	419
Ingraham. Facts in regard to uterine fibroids.....	684
Inguinal canal, ovarian cyst protruding through the. Baldy.....	827
Insane patients, surgical treatment of. Hobbs.....	170
Intraligamentous cysts, improved technique in operation for. Hall..	752
ovarian cystoma, technique of. Gilliam.....	517, 742
Intubation and antitoxin.....	144
in private practice.....	777
Intussusception.....	435
of the ileum.....	919
in the infant, surgical treatment of. Howitt.....	617, 743
Items.....	304, 447

J

Johnson (J. T.) Pus in the pelvis.....	24, 93
Cancerous uterus removed by the vagina with clamps.....	558
Johnson (H. L. E.). Vaginal hysterectomy for procidentia.....	568

K

Kelley. Vaginismus.....	529, 571
Kelly. Garceau's cystoscope.....	736
Treatment of myomatous uteri.....	397
Kidney, embolic infarction of.....	777
floating. Cameron.....	704
sarcoma of, in childhood.....	922
Kidneys, congenital pelvic, obstructing the parturient canal. Cra- gin.....	36, 104
Kreutzmann. Diabetes mellitus and carcinoma uteri.....	846

L

Labor, dry.....	285
résumé of one thousand cases of. Hammond.....	855
Ladiuski. Abscess of uterus and vagina with sarcoma of one ovary and adeno-carcinoma of the other.....	78
Langfitt. Vaginal section.....	722
Laparotomy during pregnancy.....	288
Lea. Sagittal fontanelle.....	885
Lewis. Uremia in the process of child-bearing.....	217
Ligature and suture material—absorbable or non-absorbable? Gor- don.....	403
Liver, acute yellow atrophy of, in a child of two and a quarter years..	135
Lues, hereditary. with keratomalacia.....	144
Lymph. animal, causing nephritis.....	298
Lymphatism, scrofula, and mineral waters.....	436

M

Malignant growths of the chorionic epithelium, and their relation to the normal histology of the placenta. Gaylord.....	145, 258
Mammary gland in treatment of uterine fibroids, and parotid gland for ovarian disease. Shober.....	352, 382, 400
Mania following hysterectomy. Stone.....	560
Mann. Surgical treatment of sterility.....	411
Surgical treatment of irreducible retroflexion of the pregnant uterus.....	21, 278
Marx. Appendicitis complicating the pregnant and puerperal states..	199
Measles complicated by spinal meningitis.....	296
oculomotor disturbances following.....	296
pathology.....	778
pneumonia following.....	920
relapsing.....	921
school-hygiene reforms in.....	919
value of buccal eruption for early diagnosis.....	437

	PAGE
Medicine, evolution of specialism in. Reed.....	609
Meningitis.....	919
due to pneumococci, and double pyelitis due to strepto-	
cocci, in a pregnant woman.....	895
epidemic cerebro-spinal.	138
spinal, complicating measles	296
Menstruation, insufficient. Dunn.....	715
precocious.....	909
Methods, choice of, in hysterectomy. Cushing.....	395
Metrorrhagia in young girls.	778
Micturition in children, disturbances of, and treatment.....	297
Milk.....	438
modified. Hamilton	253
poisoning in children fed on pasteurized milk ..	297
Morbid conditions involving the broad ligaments, surgical treatment	
of. Clarke.....	688
Mosely. Thyroid extract in the treatment of fibroid tumors.....	400
Mundé. Puerperal sepsis.....	1
Myomata, etiology and development of uterine.	895
uterine, and their influence upon sterility and conception..	910
Myomatous uteri, treatment of. Kelly	397

N

Naso-pharynx, malignant tumor of.....	296
Neck, tuberculous glands of.	303
Neer. Retained ovum	378
Nephritis following vaccination with animal lymph	298
Nerve disturbances, graver, due to organic changes in the genital	
organs. Humiston... ..	710, 761
Nervous and mental affections, relations of pelvic diseases to.	896
New-born, pathology of, in relation to labor ..	892
Nocturnal manifestations of disease in children.	439
Noma.....	779
diphtheritic, serum treatment.	779
Normal salt solution. Roberts.....	556
Nurse, the professional, and her training. Price.....	745

O

Obstetrics, Trendelenburg-Walcher posture in. Dickinson.....	791
Ocular troubles following suppression of menstruation..	897
Oil, creosoted, for expulsion of tracheal false membranes after trache-	
otomy.	140
Onanism in childhood.....	779
Ophthalmia neonatorum.....	298, 919
Organs, genital, graver nerve disturbances due to changes in. Humis-	
ton.....	710, 761
Orthodontia.....	780
Os, artificial dilatation during labor.....	772
Otitis media in nurslings.	298
Ovarian cystoma, septic infection of. Cumston.....	630
hemorrhage. Bovée ..	264
serum therapy	908
Ovaries, sarcoma and adeno-carcinoma of, with absence of uterus and	
vagina. Ladinski.	78
Ovary, carcinoma developed from the wall of a dermoid cyst of the.	
Clark.....	305
disease of, parotid gland for. Shober.....	359, 382
and tube removed postmortem. Stone	99
cysto-fibro-myxoma of	900
dermoid cyst of.....	288
Ovum, retained. Neer.....	378

P

	PAGE
Papillomato-fibro-adeno-cystoma, ovarian. Bovée.....	879
Parotid gland for ovarian disease, and mammary gland for uterine fibroids. Shober.....	352, 382, 400
Parturient canal, congenital pelvic kidneys obstructing the. Craigin.....	36, 104
Parturition followed by acute inversion of the uterus. Stone.....	208
Pedicle, searing the, with the electro-cautery. Skene.....	408
Pelvic disorders, exanthemata as a factor in producing. Hyde.....	648
diseases, relation of, to nervous and mental affections,...	896
inflammation.....	900
Pelvis, pus in the. Johnson.....	24, 93
uniformly contracted, of infantile type.....	890
Pemphigus in new-born, cold as an etiological influence.....	299
Perineum, lacerated, Emmet's operation for. Stone.....	524, 573
Peritoneal section, improvement in technique of after-treatment. Byford.....	18
Peritonitis, acute fibrino-purulent, in infants. Acker.....	248, 265
cause, twisted ovarian pedicle. Deaver.....	832
chronic serous, in children.....	299
tubercular.....	909
Pertussis, bacteriological examination.....	299
treatment.....	299
Pessaries in the treatment of retroversion of the uterus. Sprigg.....	862
Placenta, medicinal action of.....	907
previa, air embolism following.....	420
relation of malignant growths of the chorionic epithelium to normal histology of. Gaylord.....	145, 258
Pleurisy, hemorrhagic, in childhood.....	300
Pneumococci, infection with.....	143
Pneumonia following measles.....	920
Pond, Advantage of intestinal drainage in appendicitis and other abdominal inflammations.....	829
Porro operation versus total hysterectomy. Boldt.....	41, 272
Porter, Injuries of the gall ducts.....	693
Practitioner, general, treatment of uterine fibroids by the. Vander Veer.....	731
Pregnancy and tuberculosis.....	432
complicated with appendicitis. Marx.....	199
extrauterine.....	116, 577
extrauterine, and eclampsia.....	431
following ventrofixation, with improvements in the technique of the operation. Smith.....	66, 106
grippe in relation to.....	891
lactation during.....	892
laparotomy during.....	288
multiple.....	891
ruptured tubal. Stone.....	557
with occlusion of the cervix.....	891
Price, Professional nurse, the, and her training.....	745
Procidentia vaginal hysterectomy for. Johnson.....	568
Pseudo-eclampsia.....	431
Psychoses, post-operative.....	897
Puberty, nature and management of.....	909
period following.....	783
Puerperium, thrombosis and embolism during.....	428
Puerperal sepsis. Mundé.....	1
Puerperium, forty cases of fever in the, with bacteriological examination of the uterine contents. Williams.....	323
Purpura hemorrhagica in infancy.....	780
Pus in the pelvis. Johnson.....	24, 93
Pyothorax, fever following operations for, in children.....	781

Q

	PAGE
Quinine as substitute for ergot in midwifery.....	285

R

Rectal operations.....	909
Rectum, prolapse of.....	910
Reed. Evolution of specialism in medicine..	609
Relaxed abdomen and its evil consequences. Illoway.....	331
Retained ovum. Neer.....	378
Retroflexion, irreducible, of the pregnant uterus, surgical treatment of. Mann	21,
	278
Retroversion of the pregnant uterus. Atherton.....	555
of the uterus, pessaries in treatment of. Sprigg.....	862
Reviews. Davenport. Diseases of Women.....	888
Dudley. Diseases of Women.....	887
Frumerie. Massage gynécologique.....	427
Kelly. Operative Gynecology	574
Lagrange and Leguen. Medical and Surgical Treatise on Gynecology	576
Morton. Cataphoresis, or Electric Medicamental Diffusion, Pichevin. De l'Extirpation totale de l'Utérus par le Voie vaginale	428
Playfair. Treatise on the Science and Practice of Midwifery	889
Stedman. Twentieth Century Practice.. ..	426, 889
Tarnier et Budin. Traité de l'Art des Accouchements.	427
Tonatre. Yellow Fever	428
Transactions of the American Association of Obstetricians and Gynecologists, vol. x.....	577
Transactions of the Southern Surgical and Gynecological Association, vol. x.....	577
Rheumatism, acute articular nodular, in childhood.....	921
Rhinitis, external, due to the Klebs-Löffler bacillus appearing in children convalescent from scarlet fever	142
Robb. Endothelioma lymphangiomatodes of the cervix uteri	418
Roberts Normal salt solution.	556
Roper. Difficult cases of fronto anterior positions of fetal head.....	886
Ross. Ectopic gestation occurring twice in same patient.....	850
Rubeola, polymorphous forms and differential diagnosis	301
Rupture of the symphysis pubis during labor. De Lee.....	483
Ruptured tubal pregnancy. Stone.....	557

S

Saline infusions, post-operative. Boise.....	419
Salpingectomy, patency of the stump after. Bovée.....	57, 408, 565
Sarcoma of the uterus. Bovée.	568
Schleich mixtures, anesthesia by. Garrigues	274
Scrofula, lymphatism, and mineral waters.....	436
Scurvy, infantile.....	441
Section, abdominal, three months after vaginal section. Baldy.....	825
peritoneal, improvement in the technique of after-treatment. Byford	18
vaginal. Langfitt.....	722
Sections, abdominal, for ovarian tumors, clinical observations based upon one hundred and sixteen cases. Werder.....	668, 771
Cesarean	280
Sellman. Treatment of endometritis	728
Senecio in functional amenorrhea.....	286
Sepsis, puerperal. Mundé.....	1
Serum, antistreptococcus	434
therapy and death in diphtheria	301
therapy in streptococcic infection in childbirth. Fry.....	423
therapy, ovarian	908
Shober. Ectopic gestation associated with tuberculosis of the Fallopian tube.....	836

	PAGE
Shober. Mammary gland for uterine fibroids, and parotid gland for ovarian disease.....	352, 382, 400
Skene. Searing the pedicle with the electro-cautery.....	408
Smith (A. L.). Treatment of adherent uteri through the posterior vaginal cul-de-sac.....	106
Pregnancy following ventrofixation, with improvements in the technique of the operation.....	66, 106
Smith (R. R.). Tuberculosis of the breast.....	840
Smith (T. C.). What have you to offer that is better?.....	785
Solution, normal salt. Roberts.....	556
Specialism, evolution of, in medicine. Reed.....	309
Spencer. Fibromyoma of uterus.....	882
Spina bifida, X-rays in.....	782
Strigg. Pessaries in the treatment of retroversion of the uterus.....	862
Stenosis, pyloric, in the nursling.....	921
Sterility, surgical treatment of. Mann.....	411
Stone (I. S.). Emmet's operation for lacerated perineum and relaxed vaginal outlet.....	524, 573
Fibroid of the uterus undergoing degeneration.....	557
Mania following hysterectomy.....	560
Ruptured tubal pregnancy.....	557
Tube and ovary removed post mortem.....	99
Stone (W. S.). Acute inversion of the uterus following parturition.....	208
Streptococcic infection in childbirth, serum therapy in. Fry.....	423
Streptococcus enteritidis.....	442
Stridor, inspiratory, in nurslings.....	782
Strobell. Celiotomy done under the "infiltration anesthesia" of Schleich.....	550
Stump patency of, after salpingectomy. Bovée.....	57, 408, 565
Stuttering.....	302
Superfetation in the human race.....	891
Suppuration, pelvic, complications following vaginal hystero-salpingo-öophorectomy in. Blume.....	657, 737
Surgery, gynecological, should non-absorbable ligatures be discarded in?.....	403
Surgical treatment of insane patients. Hobbs.....	170
Suture and ligature material—absorbable or non-absorbable? Gordon.....	403
Symphysiotomy.....	774
Carr.....	535, 562
Symphysis pubis, rupture during labor. De Lee.....	483
Syphilis, hereditary, with saddle nose.....	443
medicinal treatment of congenital infantile.....	923
tardy hereditary.....	443

T

Tannoform as an antidiarrhoicum in children.....	923
Tannopin, action.....	783
Testicle, tuberculosis of.....	302
Tetanus puerperalis.....	889
traumatic, cured with Behring-Knorr's tetanus antitoxin....	445
Tetany in infancy.....	923
Thigh fractures, healing of, in children.....	445
Thomas. Gastro-enterostomy by a modified Von Hacker method ...	703
Thrombosis and embolism during the puerperium.....	423
Thymus, enlarged, causing sudden death by compression of trachea ..	784
Thyroid extract for fibroid tumors. Mosely.....	400
extract for fibroids, committee on, of American Gynecological Society.....	408
Tompkins. Hysterical eructations.....	362, 389
Tonsils as entrance for severe infections.....	445
Trendelenburg-Walcher posture in obstetric operating. Dickinson....	791
Tube and ovary removed post mortem. Stone.....	99
Tubercles, biliary, and biliary cavities in the child.....	913
Tuberculosis and pregnancy.....	432

	PAGE
Tuberculosis, infantile.....	924
in public schools	925
intestinal.....	143
of the breast. Smith.....	840
peritoneal.....	287
primary, of Fallopian tube, associated with ectopic ges- tation Shober	836
transmission by means of placenta.....	431
Tubo-ovarian disease, chronic, and appendicitis. Bowen.....	92
Tumor, malignant, of naso-pharynx.....	296
Tumors, ovarian, clinical observations based upon one hundred and sixteen abdominal sections for. Werder.....	668, 771
ovarian, simulating inflamed ovaries.....	288
pelvic, with adhesions to liver and gall bladder.....	288

U

Urea, excretion, influence of ammonium salts on.....	303
Uremia in the process of child-bearing. Lewis.....	217
Ureter, injuries to.....	911
Urethritis, gonorrheal.....	909
Urine, retention of, in nursing	784
toxicity of, in scarlatina.....	924
Uteri, adherent, treatment through the posterior vaginal cul-de-sac. Smith.....	106
myomatous, treatment of. Kelly.....	397
Uterine appendages, conservative operations upon. Dudley.....	407
Uterus, absence of, and vagina, with sarcoma of one ovary and adeno- carcinoma of the other. Ladinski.....	78
acute inversion of, following parturition. Stone.....	208
and adnexa, surgery of, per vaginam. Wathen.....	51
and adnexa, removal per vaginam after chronic inflammatory disease of ovaries and tubes.....	288
endothelioma lymphangiomatodes of cervix of. Robb.....	418
fibroid of the. Bovée.....	572
fibroid of, undergoing degeneration. Stone.....	557
operation for retropositions of.....	903
perforation of.....	898
pregnant, retroversion of. Atherton.....	555
pregnant, surgical treatment of irreducible retroflexion of. Mann.....	21, 278
primary carcinoma of fundus. Baldy and Williams	345, 388
prolapse of the	905
removal of tumor of, from subject past ninety years of age. Van Rensselaer.....	876
retroflexion of.....	433
retroversion of, pessaries in treatment. Sprigg.....	862
rudimentary, absence of vagina, menstrual molimina, castra- tion for. Vineberg.....	500
rupture of body of, during confinement. Carstens.....	852
rupture of, followed by subperitoneal emphysema.....	285
spontaneous rupture of gravid.....	892
torsion of the.....	904
vascular anatomy and physiology of human.....	895

V

Vagina, absence of, and uterus, with sarcoma of one ovary and adeno- sarcoma of the other. Ladinski.....	78
bacteria of, and their practical significance. Williams.....	390, 449
bacterial contents of secretion of, to the pregnant woman. Williams	807
cysts of	899
senile atresia of.....	909
aginal section. Langfitt.....	722

	PAGE
Vaginismus.....	909
Kelley.....	529, 571
Vander Veer. Does the general practitioner accord that confidence to the surgical treatment of uterine fibroids which our present success justifies?.....	731
Varicella.....	446
Ventral hernia. Bowen.....	547, 558
Ventrofixation, pregnancy following, with improvements in the technique of the operation. Smith.....	66, 106
Vineberg. Castration for rudimentary uterus, absence of vagina, menstrual molimina.....	500
Vomiting of pregnancy, rapid cure of incoercible.....	774
Von Hacker method, gastro-enterostomy by a modified. Thomas.....	708
Van Rensselaer Removal of uterine tumor from subject past ninety years of age.....	876
Vulva, chronic inflammatory hyperplasias of. Beyea.....	315
diphtheria of.....	294
diphtheria of. Williams.....	180
Vulvar growth, recurrent. Baldy and Wells.....	370, 388, 553

W

Walcher's position.....	284
Water in the treatment of gastro-enteritis of infants.....	926
Waters, mineral, in lymphatism and scrofula..	436
Wathen. Surgery of the uterus and adnexa per vaginam	51
Wells and Baldy. Recurrent vulvar growth.....	370, 388, 553
Werder. Clinical observations based upon one hundred and sixteen abdominal sections for ovarian tumors.....	668, 771
What have you to offer that is better? Smith.....	785
Whooping cough.....	446
Williams (H. L.) and Baldy. Primary carcinoma of the fundus uteri.....	345
Williams (J. W). Bacteria of the vagina and their practical significance.....	390, 449
Bacterial contents of the vaginal secretion of the pregnant woman.....	807
Diphtheria of the vulva	180
Forty cases of fever in the puerperium, with bacteriological examination of uterine contents	323
Winter. Criminal abortion.....	85, 101
Worms, intestinal.....	776
thread, in biliary system.....	446

X

X-ray diagnosis in children.....	608
value in spina bifida.....	782

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